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GEORGIOS GIANNAKIS

Reduplication as a morphological marker in the Indo-European languages: Reduplicated presents[1]

Abstract. Reduplication is a very productive morphological device in the grammars of the various ancient Indo-European languages and is used in the formation of nominals, adverbials, particles and verbs. This study will focus on the examination of a small class of verbal formations, the reduplicated presents, a class that displays a number of peculiar features regarding both its formative details and its semantic aspect. Different types of reduplication are employed in the present system, the most common being (a) partial or symbolic reduplication, with only part of the root with a vowel copied over in the reduplicative syllable, and (b) full reduplication with a number of subtypes, best exemplified by the intensive formations of Sanskrit. Other less common types are the so-called "Attic" reduplication, in origin a subtype of (a) and more common in Greek with vowel-initial roots, and the ambiguous "internal" reduplication that takes place in the interior of the word. What I intend to do in this study is to present a collection of the material attested in the different languages, systematize it according to certain criteria, with occasional comments upon some problematic phonological details as well as upon the etymological associations of some forms.

1. Generally in the Indo-European languages the present tense of a verb may be obtained by one or more of the following morphophonemic processes: (a) ablaut of radical vowel, i.e. by qualitative or quantitative changes of the vowel of the root, thus observing different gradations: full or normal grade, lengthened grade, and zero grade when the radical vowel is reduced to either zero or to a reduced vowel, usually -i-, (b) affixation, i.e. suffixation or infixation, (c) reduplication, and (d) suppletion. The different processes may not be historically cotemporal with one another, but in the historical period of the languages concerned they are all well documented and, to varied degrees, used by most or all of the languages. Reduplication, in particular, is one of the best utilized processes in the formation of the present, the preterite and the perfect systems.

Despite the large diversity in the different languages, some gen-

eral characteristics, peculiar to the class of the reduplicated presents as a whole in IE can be marked. First, we must distinguish between the two main types of present formations, the athematic and the thematic. The former, historically the oldest present form in IE, shows full grade of the radical vowel in the singular and dual and zero grade in the plural, and the endings are directly attached to the reduplicated stem; the accent originally was on the radical syllable but later shifted on to the reduplicative syllable. The latter, which is a more recent formation but well into the common period of PIE, is characterized by zero grade of the root, accent on the reduplicative syllable and the intervention of a thematic vowel between the reduplicated stem and the endings. In both types the reduplicative vowel is normally -i-, but other vowels too are common. This is a very general statement, with many exceptions, and in no way should it be taken as the only rule covering the entire corpus of the material. It, however, implies that this must have been the situation in the proto-language well before the split into different dialects and eventually distinct languages and as such it serves as a hint for comparativists in the effort to reconstruct the proto-paradigm or isolate the model for later creations. For an evaluation of the development of this present class in Indo-European see section 8 along with a tabular representation of the results of this evaluation at the end.

2. Material from Greek

2.1 Reduplicated presents of the athematic type. Greek has preserved a good number of these archaic present formations, and in some cases analogical extensions have broadened the paradigm. Such present stems are the following:

βίβημι 'stride', evidenced in the participle βιβάς; Lac. βίβατι corresponds to Skt. *jígāti* 'goes'. With transfer to the thematic conjugation we find βιβῶ, participle βιβῶν, an old variant of βιβάς in Homer, and with *-sk-* suffix βιβάσκω. Cf. also simple present βαίνω.

*δίδημι 'bind, tie', seen in the 3 pl. imperative διδέντων, as in *Od.* 12.54 ἐν δεσμοῖσι διδέντων 'let them bind in bonds'; cf. also 3 sg. imperfect δίδη; cf. Skt. unreduplicated *dyáti* from root *dā* 'bind'.

δίδωμι 'give, offer', cf. Skt. *dádāmi* 'id.', Lat. unreduplicated thematic present *dō* (but see section 5, below). In Homer we find an imperative with long vowel δίδωθι and infinitive διδοῦναι; most likely the lengthening is metrical, as in τιθήμενος, τιθήμεναι.

δίζημαι 'seek out', for ζητέω 'id.', from a proto-form *δι-δι̯ᾱ-μι. We have the gloss in Hesychius δίσδημαι· ζητῶ; cf. Lesb. unre-

duplicated ζάτημι and the noun δίζησις 'inquiry'; by analogy to the future διδώσω of δίδωμι we get διζησόμεθα (*Od.* 16. 239). Homer attests the form δίζε, with a transfer to the thematic conjugation.

ἵημι 'throw, cast', pl. ἵεμεν; Curtius (1873: 153 ff.) sees only one root for both meanings 'desire' (ἵεμαι, middle) and 'send, throw'. According to him, originally there was a simple root **yā-* which is intransitive, and with reduplication it becomes causative, hence the meaning 'make go'>'send; throw'; cf. the parallelism between Greek and Latin ἵστημι : *sistō* = ἵημι : *serō*. But on the other hand we have also ἵημι : ἧκα : *iaciō* : *iēcī* = τίθημι : ἔθηκα : *faciō* : *fēci*. The Armenian noun *himn* 'basis, foundation' from IE **semn̥-* also points to a root with **s-*; cf. on the same line Lat. *sēmen*, OHG *sāmō* 'seed', Lith. *semens* 'Flachsaat', Gk. ἧμα 'cast, throw'. Therefore, we must have two different roots, **ye-* seen in ἵημι (<**yi-yeH-mi*) = Lat. *iaciō*, and **sē-* (i.e. **seH-*) as in ἵημι (**si-seH-mi*) = Lat. *serō*. Cf. further Frisk (1960: 714–15) and Hamp (1985: 36 ff.).

ἵστημι 'stand', pl. ἵστᾰμεν; its meaning is causative according to Curtius (1873: 154), whereas Skt. *tíṣṭhati* and Av. *hištaiti* 'id.' (with transfer to the thematic type) have intransitive meaning; cf. also Lat. *sistō*.

κίχρημι 'lend', i.e. 'give or cause to use' beside χράομαι 'use'; found also in the middle κίχραμαι 'borrow'. Cf. also the reduplicated future κιχρήσει·δανείσει, quoted by Hesychius, like διδώσω, διζησόμεθα.

ὀνίνημι 'to benefit', from a root **H₃neH₂-* (see Lejeune 1964: 94–96). This present must have been an analogical creation built on the proportion στῆναι : ἵστημι = ὀνῆσαι : X. The -i- seems to have a morphological significance, i.e. it must be the morphological index of present tense, associated thus either with the vowel -i of the present ending *-mi* or with the -i- of the present reduplication in general. Wackernagel (1953: 946) connects it to Skt. *nā-thá-* 'help, assistance; resource'.

πίμπλημι 'fill'. Similar patterning is seen in πίμπρημι which shows a striking structural and paradigmatic correspondence to πίμπλημι; cf. πίμπρημι 'burn', πιμπράναι, πρήσω, ἔπρησα, πέπρηκα, ἐπρήσθην, πρήθω = πίμπλημι, πιμπλάναι, πλήσω, ἔπλησα, πέπλημαι, ἐπλήσθην, πλήθω. Cf. also a Homeric imperative ἐμπίμπληθι with long radical vowel.

**πίφρημι*, attested in the infinitive ἐσπιφράναι 'insert', used by Aristotle (*Historia Animalium* 541[b] 11), probably built on the model of ἱστάναι and related to Gk. φέρω and Skt. *bíbharti* 'carry'.

τίθημι 'put, place', pl. τίθεμεν from IE **dheH-*; a widely attested verb in most of the Indo-European languages.

τίτρημι 'pierce', beside τιτράω, τιτραίνω, τετραίνω all reduplicated forms, obviously with intensive meaning based on the simple τερ-/τορ- seen in the present τείρω 'wear out, distress' and aorist τορεῖν, Lat. *terō* 'to rub'.

The form ἵπταμαι 'fly' is a later formation from πέτομαι 'id.', built on a model like ἔστην : ἵσταμαι = ἔπτην : X.

We find forms like κίχημεν, κιχήτην, etc. which are understood as aorists to the new present κιχάνω, supposedly all from *κίχημι 'come to, reach' next to simple present χάζομαι 'id.'. Chantraine (1968: 536) points out that this verb is "d'aspect terminatif", and "a été réservé a une fonction quasi aoristique". *κίχημι presupposes a PIE **ghi-gheH-mi* which gives Skt. *jáhāti* 'he leaves', Av. *zazāiti* 'return'; cf. the Sanskrit aorist *áhāt* with no reduplication in contrast to Gk. κιχῆναι which is an innovation.

2.2 Reduplicated presents of the thematic type. The reduplicated presents with thematic vowel constitute an established class within the verbal system of Greek, characterized by certain features peculiar to this class alone: zero grade of the root and reduplicative vowel -i- (the latter feature is shared also by the athematic type). As a rule, the accent falls on the reduplicative syllable (like the athematic type too) with the only exception of the vowel-initial verbs ἰάχω, ἰάλλω, ἰαύω, ἰάπτω, and also τιταίνω and λιλαίομαι, but we may say that in these verbs too the accent was originally on the reduplicative syllable and only later and secondarily shifted to the root under the influence of other *-yo* type verbs. This type is very productive in Greek, and we find a great number of such forms both in the early literature and in the Classical period. However, certain prototypes and archaic forms can be discerned, which served as the model for later creations either by analogical extensions or by other processes. These are:

γίγνομαι 'be born' from **ǵen-* (cf. aorist ἐγένετο), Lat. *gignō*, etc.

ἰάλλω 'shoot, send forth', from **si-sl̥-yo*; cf. Skt. *sísarti* from the root *sṛ* 'flow'. There is a striking parallelism between Homeric Greek χειρας ἰάλλειν and Vedic Sanskrit *bāhávā sísarti* (see Thieme 1971: 185–193, seconded by Narten 1969a: 77–103).[2]

ἰάπτω is believed to be a reduplicated present from *Ϝι-Ϝαπ-ιω 'to hurt, to mar'.

Probably related to the previous verb is the reduplicated verb

*ἴπτομαι 'bear hard upon, smite', attested in the future ἴψεται and the aorist ἴψαο. In Hesychius we find the gloss ἰμφθείς · βλαφθείς, whereas the Etymologicum Magnum gives ἴπτω · βλάπτω. The reduplication type is that of ἰ̯χανάω and Skt. *ī́rte, ī́jati*, see section 4.1.5. In other words, the length of the initial ī- is due to the following laryngeal, and so the reconstruction must be **Hi-Hk^{w}-yomai*; Hitt. *(a)impa-* 'weight, burden' may be related to the Greek verb (see Puhvel 1984: 14–15).

ἰαύω 'lie, rest, pass the night', is a reduplicated formation from the same root with αὐ̯λις 'tent, place for passing the night in', and ἀέσκω 'pass the night', therefore we start with a root **au* (<**H$_2$eu-*). State II stem **H$_2$w-és-* gives Greek aorist ἄεσσα, Hitt. *hwes-* 'live', Skt. *vásati* 'dwell', Go. *wisan*, *was* 'to be' (see Chantraine: 1968: 24, 454; Schwyzer 1953: 648, 690). Cf. also Barton (1988: 49–58).

ἰάχω 'shout, cry, call' from **Fι-Fαχω*; cf. also ἠχή, ἰαχή (i.e. *FιFαχή*) 'sound, noise'; -αχ- is the zero grade of the root, conforming thus to the general principle of these formations of using zero-grade root; perhaps, this verb is an onomatopoeic formation from the noise at battle, as it applies mainly to battle scenes and metaphorically afterwards to other cases, especially the roaring waves of the sea.

ἵζω 'sit; seat', from IE **si-sd-ō* as in Lat. *sīdō*, Skt. *sī́dati*, (long -ī- with compensatory lengthening after loss of -s- in both Latin and Sanskrit).

ἴσχω 'hold, restrain' from **si-sgh-ō*, beside simple ἔχω; cf. Skt. *sáhate* 'prevail' (PIE **segh-e-toi*).

ἰ̯χανάω 'be eager, yearn for' is a reduplicated present, from a stem seen in ἀχήν 'poor', thus from **Hi-Hgh-an-*; Skt. *ī́hate* 'to crave, yearn', as well as Av. *izyeiti* 'yearn, desire' are its Indo-Iranian cognates (see Beekes 1969: 129, 168, and 4.1.5 below).

λιλαίομαι 'desire, be eager for' from **λι-λασ-ι̯ομαι*; cf. Skt. *lásati* 'desires'.

μίμνω 'stand firm; stand successfully' from **men-*, beside simple μένω 'stay, remain'.

νίσ(σ)ομαι with basic meaning 'return home', from **ni-ns-omai*, i.e. root **nes-* as in νέομαι (for **νέσομαι*); Skt. *nímsati* 'kiss, i.e. bring together, unite' must be its cognate. In fact, the original meaning of νίσ(σ)ομαι must have been 'save', therefore 'bring / come home safely', probably the starting point being the safe return of the ship; cf. Go. *nasjan* 'save'.

ὀπῑπεύω 'to eye, to watch', from **H$_3$k^{w}-i-H$_3$k^{w}-* of the type seen also in ὀνίνημι, ἠνίπαπε, ἀτιτάλλω, etc. (see Cowgill 1965: 149);

cf. also Skt. *íkṣate* 'sees'; also the Homeric noun παρθενοπῖπα 'one who ogles girls'.

πῑ́πτω 'fall; drop' from **pet-*, beside πέτομαι 'fly', Skt. *pátati* 'fly', etc. The long -ī- in the reduplication is due to analogy to ῥῑ́πτω 'throw, cast', but cf. also the Sanskrit reduplicated aorist *ápīpatat* with long reduplicative vowel.

τίκτω (from *τίτκω by metathesis; cf. aorist ἔτεκον) 'to beget' (for the father), to 'conceive' (for the mother). Its etymology remains uncertain.

τιταίνω 'bend (a bow); pull, stretch' from root **ten-* as in τείνω (< *τεν-ι̯ω) 'stretch', and thus IE **ti-tn̥-yō*; cf. Skt. *tanóti* 'stretches'.

The verb ἀτιτάλλω 'to rear, to tend' vs. simple ἀτάλλω 'play like a child; jump, amuse oneself', perhaps follows the same formative pattern with ὀπιπεύω, if it is not a denominative from ἄττα 'father' (see Hitt. *attas* 'father', Skt. *attā-* 'mother; mother's sister', OIr. *aite* 'foster-father; tutor, teacher', Gmc. *edel* 'nursling' for children of noble birth) and thus belonging to the nursing vocabulary where reduplication is very common.

Schwyzer (1953: 690) lists also ἴλλω 'wind, turn round' from *ϝι-ϝλ-ω (after Solmsen), and μίσγω 'mix' from **mi-mzg-ō* (after Wackernagel). Klingenschmitt (1975: 75) claims that the present ἵκε/o- 'reach at, arrive' is a reduplicated stem **si-ske/o-* built on a proportional analogy pres. ἵκε/o- : aor. ἵκε/o- = ἰσχε/o- : σχε/o-. Cf. also Rasmussen (1988: 68).

In the later language we find πέφνω and κέκλομαι, clearly back-formations from the aorists ἔπεφνον (cf. present θείνω 'kill' from PIE **g^{w}hen-yo*, as in Skt. *jáhati*) and ἐκέκλετο (aorist of κέλομαι 'command, order, bid'; cf. also κελεύω 'id.').

2.2.1. Reduplicated presents with -sk- suffix. We have also a group of reduplicated presents which are marked with the additional enlargement of the suffix -σκ-, an old and very productive suffix in Indo-European. The combination, however, of reduplication and this suffix seems to be a Greek peculiarity, as it is not so common in other languages, except for Hittite and the Latin forms *discō* and *-gnoscō*. These are:

ἀραρίσκω 'lift, raise' or 'fix, put together'.

βιβάσκω 'stride', beside βιβάω, βίβημι, probably a combination of βίβημι and βάσκω.

βιβρώσκω 'devour'; cf. Skt. pres. *giráti* 'swallow', Lith. *geriù*, *gérti* 'drink', Lat. *vorāre* 'devour', from a PIE root **g^{w}er-*.

γιγνώσκω 'know, perceive', probably a fusion of two forms *γίγνωμι and γνώσκω(?), so Leumann et al. (1963: 314).

δειδίσκομαι 'pledge in drinking; welcome, greet', from δικ-, δείκνυμι (δειδ- for δηδ- with lengthening of the reduplicative vowel as in Sanskrit *bābadh-/badh-*, intensive of *bādh-* 'oppress').

διδάσκω 'teach, instruct'; cf. Lat. *discō* from **di-dc-scō*, and Av. *didans/didah-*.

διδράσκω 'run away', comparable to Skt. *dí-drāpayiṣati*, from PIE root **dreH-* 'run'.

ἐίσκω 'make like', from *ϝε-ϝικ-σκω, beside εἴκω. In view of (ϝ)ΐσκω the initial ἐ- of ἐίσκω may be a prothetic vowel and not part of any reduplication. In any case, this verb is a Greek peculiarity and remains an obscurity for us.

ἐμπιπάσκομαι 'acquire', from ἐμπάομαι.

ἱλάσκομαι 'propitiate', from *σι-σλά-σκομαι; cf. the Homeric long-vowel imperative ἵληθι <**si-sleH-dhi* (*Od.* 3.380, 16.184), later also ἵλαθι, -τε (cf. Brugmann and Thumb 1913: 331ff.; Petersen 1926: 15; Frisk 1960: 720–22). For a full discussion of this verb with the problems it presents see Klingenschmitt (1970).

κικλή(ι)σκω 'to summon', cf. also κέκλομαι, καλέω.

μιμνήσκω 'remind', cf. perfect μέμνημαι.

πιπίσκω 'give to drink', a causative to the simple πίνω. In view of the reduplicated present stem attested in Skt. *píbati*, Lat. *bibō*, OIr. *ibid* we can assume a similar form for Greek, *πίπωμι (or the like; cf. perfect πέπωκα), and then with thematization of this stem and with the addition of the suffix -ίσκω (after e.g. ἀραρίσκω, εὑρίσκω, etc.) we get πιπίσκω.

πιπράσκομαι 'sell', beside simple πέρνημι, περνάω 'id.'.

πιφαύσκει 'make manifest to the sight; display, show', beside sipmle φαίνω 'bring to light'.

τιτρώσκω 'wound, injure'; cf. also τίτρημι, τιτραίνω and Skt. *títarti* 'cross', Av. *titara-* 'id.', Luv. *tatarh-* 'break'.

τιτύσκομαι 'to make ready; prepare', from *τι-τυκ/χ-σκομαι; cf. τυχ- in τυγχάνω; cf. also gloss in Hesychius τετύσκετο · παρεσκευάζετο.

2.2.2. Intensive presents. Normally, the intensive reduplicated presents of Greek are characterized as in other languages by full reduplication and a *ye/o-* suffix. Such formations are:

δαιδάλλω 'to adorn with cunning work', probably from the noun

δαίδαλλον. Intensive and factitive meanings are most characteristic of this verb.

δαρδάπτω 'devour', with dissimilation from *δαρδάρπ͡ιω, beside δρέπω 'pluck, pick off'.

μαιμάω 'be eager for action' beside μαίομαι 'search, seek'.

μαρμαίρω from basis μαρ- seen in μαρίλη 'coal-dust', μαριεύς 'a stone that takes fire when water is poured on it' (see Liddell et al. 1968: 1081), etc.; its formation is parallel to that of δαιδάλλω. See Tichy (1983: 289–96) for a comprehensive treatment.

μορμύρω 'rush, roar' (for waters), beside μύρομαι 'shed tears'.

παμφαίνω 'shine, gleam, glitter' beside φαίνω (from *φανιω). Cf also πιφαύσκω above.

παπταίνω 'look, search for', related to Skt. *cikéti* 'observe' and Av. *cikayat* (subjunctive) 'he shall atone'(?) from IE root *$k^we(i)$-.

ποιπνύω 'exert oneself, be busy' beside πνέω, πνείω from *πνέϝω; cf. perfect πέπνυμαι 'be vigorous'. The -οι- probably after verbs like μοιμύλλω 'compress the lips', ποικύλλω 'look gaping about' where it comes from dissimilation (μοι-, κοι- from *μολ-, *κολ-), as in δαιδάλλω, above.

πορφύρω 'to heave' (of the disturbed sea) or 'to be moved, be stirred' (of the heart), beside φύρω 'admix, sully, mar'; cf. Skt. *jarbhurī-ti* 'quakes' (vs. simple *bhuráti* 'quiver'), Lat. *ferveō* 'boil, ferment', Mid. Ir. *berbaim* 'boil, melt', Arm *p'urp'urk* 'foam' from **p'ur-p'ur-* (see Pisani 1966: 227).

2.2.3. In passing we can mention a few more intensive formations, but they clearly point to onomatopoeia, and thus we need not engage ourselves in any in-depth investigation at the present:[3]

ἀλαλάζω 'shout aloud', comparable to Lat. *ululāre* and Hitt. *alalamniya-* with the same meaning.

ἀκαχίζω 'cause grief; grieve, vex'. The association with Go. *agis* 'fear' (cf. the negated participle *un-agands* 'with no fear', and the preterite present *ōg* 'I fear'), OIr. *ad-ágathar* 'fears' remains uncertain.

βαμβαίνω 'chatter the teeth'; it is not related to the verb βαίνω 'go, proceed'.

καγχαλάω 'rejoice, exult'; cf. also κακχάζω, καγχάζω with the same meaning, all based on imitation of the sound of joy.

καρκαίρω 'quake, tremble', Toch. A. Kärk 'bind'.

κωκύω 'to cry out in grief or distress', apparently after the birds' cries.

ὀλολύζω 'lament', clearly from a cry of distress and lamentation.

παφλάζω 'splash, dash' for the splashing waves of the sea.

3. The Anatolian languages

3.1. Material from Hittite. Hittite employs reduplication in a great number of verbs. Both partial and full reduplication are used. The reduplicativate vowel can be *a*, *e*, *i* or *u*, and it is either the same with the radical vowel or stands in ablaut to it, the general tendency being for the reduplicative vowel to be a front vowel *e*, *i* if the root-vowel is *a*, but with a lot of exceptions. In the following listing of the reduplicated present stems from Hittite van Brock's (1964) classification according to the reduplicative vowel will be followed.

3.1.1. Simple (or partial) reduplication.

3.1.1.1. Stems with reduplicative vowel -e-:

memai- 'speak', found only reduplicated with no simple counterpart, probably an onomatopoeic formation of the same type as Gk. μιμίζω 'neigh' (of horses). Cf. also Skt. *mímāti* 'bellow', OCS *mimatĭ* 'stutter'.

sesariski- 'strain, filter', further enlarged with the suffis *-sk-*; cf. noun ^{GIS}*sesarul-* 'strainer, filter'; most likely cognate with Skt. *sísarti* 'flow' and Gk. ἰάλλω.[4]

siessaranzi, from *sarra-* 'break'.

tekkussai- 'point', perhaps from **te-tkus-*, but it presents phonetic difficulties. Its association with Gk. δείκνυμι is not without questions. Puhvel (1981: 263) suggests the PIE stem **dheg^{w}h-* as in Av. *daxš-* 'teach'.

tethai- 'to thunder'. Ambrosini (1959: 292) says that this is an old reduplicated type, common with vocabulary referring to natural phenomena, whereas Kronasser (1966: 572) sees in it a denominative formation.

wewakk- 'demand', from a basic verb *wēk- / wĕkk-* 'desire', with cognate Skt. *vavaś-*. Morphologically it goes with Skt. *dádhāmi*, but functionally parallels the Sanskrit intensives. Thus the pair *wēk- : wewakk-* stands for IE **wḗḱ-ti* 'bittet' : **wé-woḱ-ti* 'fordert' (Oettinger 1979: 433). Milewski (1936: 56), however, sees in *wewake* an old IE perfect, and in *wakezi* an old present, both with the same meaning 'he demands'. Cf. also van Brock (1964: 127–128).

3.1.2. Stems with reduplicative vowel -a-:

hahriya-: cf. *hah(ha)r(a)-* 'rake', comparable to Lat. *ārea* 'dry land; threshing floor' (Puhvel 1981: 250).

lalukkai- 'becomes day/light'; a denominative from **lalukki-*

'bright, clear'; cf. Gk. λύκο- 'light', Lat. *lux* 'id.', Skt. *ruc-* 'shine', etc.; also *lalukkes-* 'id.', and with causative *nu-* suffix *lalukkesnu-* 'give light, illuminate'.

mamalzikanta vs. simple *mald-* 'recite, vow'.

nanankus- 'get dark'; formally and semantically parallel to *lalukkai-* (see above) from **no-nok^{w}-s* and **lo-louk^{w}-s-*, respectively (see Watkins 1985: 252).

nanna- 'lead' vs. simple *nai-* / *neya-* 'id.'; cf. Skt. *nī* 'drive, lead' and reduplicated present stem *ninī-*.

pap(p)ars- 'spray, sprinkle, shed', probably from a simplex seen in *parsittari* 'crumble' (used for the salt cracking in fire); cf. Toch AB *pärs-* 'sprinkle', from an IE root **bher-* 'cut', as in Lat. *ferīre* 'strike, beat', Latv. *birŭt* 'crumble'(?) (cf. Kronasser 1966: 396, Ambrosini 1959: 289).

paprai- 'get dirty', a denominative factitive form.

tattalusk- 'discharge' with *-sk-* enlargement.

tattarai- 'to wipe'.

wawars- ''sens inconnu'' (van Brock 1964: 120), but probably it means 'to strip off, pull off, wipe off', related to Lat. *verrere* 'scrape, sweep' from IE root **wers-*, thus Oettinger (1979: 428–29); cf. also Sturtevant (1931: 77).

3.1.1.3. Stems wtih reduplicative vowel -i-:

kikkis- 'be(come)' as opposed to simple *kis-* 'id.'. There is hardly any difference between the two verbs, e.g. in the idiomatic expressions DINGIR^{LIM} *kis-* and DINGIR^{LIM} *kikkis-* both meaning 'to die' (lit. 'to become god'). But in some cases the reduplicated stem expresses a state (see van Brock 1964: 131–33).

lilai- 'release, purify', a reduplicated stem from *lā(i)-* 'loosen, release', but it could also be a denominative from *lila-* 'conciliation or a method of purification', cf. *lilai-* 'conciliate, pacify' (see Güterbock and Hoffner 1980: 57–58, and Oettinger 1979: 382).

lilakk- from *lak-* 'curve, bend'.

lilhuwai- 'pour out', understood as deriving from the simplex *lah(h)uwai-* 'pour'; found also as *lelhuwai-* and in the cuneiform spelling as *lielhuwai-*; the form *lilahuwai-* with same meaning also occurs. It seems that the spelling *li-il-* is older than *le-el-* (see Güterbock and Hoffner 1980: 59).

lilip- vs. simplex *lip-* 'lick', with iterative (so van Brock 1964: 133–34) or distributive function; with *-sk-* suffix *lilipaisk-*.

liliwahh- 'go quickly, hasten, hurry; fly(?)'; cf. also the adjective

liliwant- 'traveling swiftly, flying' winged(?)' like the Homeric ἔπεα πτερόϝεντα 'winged words' (see Güterbock and Hoffner 1980: 61).

mimma- 'refuse, decline', supposedly from *mema-* 'refuse' but not without problems. Oettinger (1979: 497) speaks of an aoristic root **meH-* the imperative of which exists in the PIE negative particle **mē* from **meH-* 'prevent; do not'.

nink- 'rise, be exalted, become intoxicated; start a quarrel', in the middle 'mobilize' (Sturtevant 1931: 48); also *ninink-*, and *nenk-* : *nenenk-*. If we assume a root **nVk-*, then we must have either a nasal-infixed stem *ne-n-k-* / *ni-n-k-* or a reduplicated stem *ne-nk-* / *ni-nk-* with zero grade of the root of the type of Gk. μίμνω. On the other hand, if the nasal-infixed stem is taken as the starting point, then we may interpret *nenenk-* / *ninink-* as reduplicated based on it. Connection to Gk. νέκταρ from **nek̑-tr̥H₂-* or to the Greek aorist ἐνεγκεῖν 'bear, carry', Skt. *naśati* 'attain' is not impossible. Cf. Oettinger (1979: 143). Sturtevant (1931: 48) translates *nini(n)k-* as transitive or causative 'raise, lift up, take, gather, mobilize'.

pippa- 'destroy, exterminate, overthrow'.

sissa- from *sāi-* 'to plant, to fix'; also *sisiya-* : *saye-* / *siya-* 'press, shake'.

tittiya-, and also *tittanu-*, sometimes *titnu-*; from *dai-* / *tiya-* 'put, place'; doubly marked with reduplication and causative *-nu-* suffix; cognate to Gk. τίθημι, etc. from the well-attested PIE root **dheH-*; Sturtevant (1964: 60) and Pedersen (1938: 183) link this verb to PIE **staH-* 'stand'.

3.1.1.4. Stems with reduplicative vowel -u-:

duddu- 'guide; subject, dominate', also *dudduwarant-*; probably related to the word for 'deaf, hollow'.

**kukup-* inferred from the deverbative noun *kukuppalatar* 'conspiratorialness' vs. simplex *kup-* 'conspire' (see Tischler 1983: 618).

kukurs- from *kuers-* 'cut;, from basic kuer-/kur- with s-enlargement (Tischler 1983: 619); cf. the participle *kukursantes*, and with *sk*-suffix *kukuriskizzi*, *kukkuaskanzi*(?), with full reduplication and no -s- *kurkuriya-* (Oettinger 1979: 119–129). Cf. also Arm. *k'rk'rem* 'destroy'.

kukus- 'crush'; perhaps the same verb in *kuaskuas-*, *kuskus-* and even *kuúkus-* 'id' (see Kronasser 1966: 572; Sturtevant (1931: 40) translates *kuskus-* 'mix' (?); Tischler 1983: 602 ff.). Probably the Armenian *koškočel* 'break apart' is cognate to this form.

luluwaisi- 'promote, further' or 'sustain, survive' (Güterbock and

Hoffner 1980: 82–83); it seems that it has causative meaning 'cause to grow; prosper'; probably a denominative from *lulu-* 'prosperity'.

3.1.1.5. Vowel-initial roots. Vowel-initial roots reduplicate the radical vowel plus the first consonant. We have for instance the much-discussed verb *asas-* / *ases-* 'sit; seat' with causative meaning, as opposed to simple *as-* / *es-* 'to sit oneself, take a seat' which is intransitive. This verb shows paradigmatic a/e ablaut as in *karap-*, *sak(k)-*, etc.; *asas-* / *ases-* shows that in Hittite roots of the shape HeC (H = laryngeal, C = consonant) were prone to "Attic" reduplication. Functionally it corresponds to the old factitive use of Gk. ἵστημι (Oettinger 1979: 430–32), replacing thus the PIE **sisd-* as appears in Gk. ἵζω and elsewhere. Milewski (1936: 57) relates *asase* (*asasi*) to the IE perfect; cf. the Hittite middle *esa-* 'il est assis', Gk. ἧσται, Skt. *áste* (middle present). Hittite thus preserves the old IE type. Reduplicated verbs of this class pass into the Hittite *hi*-conjugation. This is the case with *asas-/ases-*. A further clearly causatival formation was created by means of *nu-* suffixation from the reduplicated stem, *asesanu-*, perhaps a sign that the original meaning of *asas-* might have been other than causative, possibly that of the IE perfect, as was proposed by Milewski.

ilaliya- 'desire' and hieroglyphic Luvian *alan(a)za-* from proto-Anatolian **Hel-Hol-* with dissimilation(?) have often been connected with Gk. λιλαίομαι 'desire'. Puhvel (1984: 355–357) sees likely an Anatolian expressive (maybe onomatopoeic) reduplication, perhaps based on interjections like Gk. ἐλελίζω, ἀλαλάζω, ὀλολύζω.

3.1.2. Full (or complete) reduplication. Full reduplication is used in the following verbs:

hashas- vs. *has-* 'open'; also with -sk- suffix *hashask-* 'remain open'.

hulhuliya- vs. *hulliya-* 'fight'.

**karkariya-* seen in the participle *kargaranti* (dat.-loc.); as for its meaning, there is not much certainty: 'purpose'(?) (so Sturtevant 1931: 33, after Forrer) or 'gladly; with pleasure' (so Kronasser 1966: 572); from *kariya-* based on noun *kari-* 'concession, yielding'; cf. *kari tiya-* lit. 'step to favor', thus 'yield; do a favor', paralleled by Gk. χάριν ποιοῦμαι 'do a favor'; cognate with Germ. *gerne*, *begehren* (see Tischler 1983: 511).

katkatiya- 'tremble, shake', probably an onomatopoeic like *tasta-*

siya- 'whisper'. An alternative explanation is that it is based on preverb *katta* 'under, beneath' and shows intensive reduplication.

kurkuriya- vs. *kuer-* 'cut' see above under *kukurs-*.

kuskus- 'crush, pound', and *kuaskuas-* see above under *kukus-*.

lahlahhiya- vs. *lahhiya-* 'make war'; also *lahhilahheskinu-*, with multiple morphological reinforcements. From a noun *lahha-* 'war, battle', which is frequently associated with Gk. λαός 'military people, troops' (cf. λαγέτας < *λαϝ-αγέτας = Myc. *ra-wa-ke-ta* 'leader of the army'), forming a helleno-anatolian isogloss λαός : *lahha-*. For more on this with references, see Tischler (1990: 9–10). On the other hand, there is a striking similarity between Hittite *lahhi* and Gk. δαί, both dat.-loc. sg. with the meaning 'in battle, in war'.[5] On the basis of the very frequent areal variation between d/l in word-initial position (cf. Hitt. *da* = Luv. *la-* 'take', Gk. δάκρυ = Lat. *lacrima* 'tear', etc.), this connection is both semantically and phonologically plausible. I would venture an etymological connection even with Gk. λαός, and also λῃΐς, λῃΐη 'booty, spoils'; cf. also λε-ηλατέω 'plunder' (lit. 'drive away booty').

tuhtuhhiya- 'swing, vibrate'(?) (see Oettinger 1979: 29); probably related to this is *dahdahhiya* 'id.'.

3.1.2.1. Instances of reduplication of the type of the Sanskrit intensives (see 4.1.6) may be seen in *hal-i-hla-*, with uncertain meaning, probably 'to kneel', so Oettinger (1979: 484), or 'disgrace'(?), so Sturtevant (1931: 19, after Götze); *par-i-prai-* vs. *parai-* 'blow'; *war-i-warant-* : *warant-* from *warai-* 'kindle, ignite', mostly with iterative or intensive meaning (see Winter 1950b: 532, n. 1).

3.2. Luvian. The data from Luvian is drawn primarily from Laroche (1959). In many cases no safe etymologies or meanings are established, and so extreme caution must be exercized when dealing with such obscure forms. For the sake of completeness, however, I include these verbs in my list of reduplicated present stems for further consideration:

ahhuwahhuwa-, seen in the participle acc. sg. *a-ah-hu-wa-a-ah-hu-wa-a-mi-in* (145 Vo 10), of uncertain meaning.

elelha(i)-, from the simple stem *elha(i)-* 'wash'(?) (so Meriggi quoted in Laroche 1959: 36).

hanhaniya(i)-, in the 3 sg. pres. gloss *ha-an-ha-ni-ya-i* (XIII 4 I 27, 63), with no meaning given.

huihuiya- from simple *huiya-* 'run'; cf. Hitt. *huya-* 'id.'.

**kiklimai-*, attested in the participle nom. pl. *ki-ik-li-ma?-i-me-en-zi* (XII 1 IV 26).

ku-ul-[ku]-ul-li-ya, from simple *kuli-* of uncertain meaning.

lala(i)-, reduplicated stem from *la(i)-* 'take'; cf. Hitt.. *da-*, the two forms showing the common d/l variation of the initial consonant of the root.

The following three forms are of ambiguous origin and obscure meaning: *lalasha-*, *lalina(i)-*, *lila(i)-* (cf. Hitt. *lilai-* 'release, purify').

mammanna- 'say' = Hitt. *mema-* 'speak'.

mumuwai-, reduplicated stem from *muwa(i)-*, a denominative of *muwa-* 'âme?, race?' (see Laroche 1959: 72).

paparkuwai-, from simple *parkuwai-* 'cleanse', cf. Hitt. *parkuwai-* 'id.'.

pappasai-, from simple *pasa(i)-* 'swallow'.

papra-, reduplicated stem from *para-* 'hunt'; cf. Hitt. *parh-* 'id.'.

pipiya-, and with suffix *-ss-* (< **-sk-*) *pipiss-*, from simple *piya-* 'give', cf. Hitt. *pāi-* 'give'.

sasla-, in the middle impv. 3 sg. *sa-as-la-at-ta-ru* (49 IV 6) with meaning not established.

Hieroglyphic Luv. *sasarla-* from *sarla(i)-* 'exalt', cf. Hitt. *sarla(i)-* 'id.'.

tatarh- 'break' (?), probably from the Hittite simple verb *tarh-* 'conquer; be able', perhaps from **ter-* 'rub, bore' which seems to be a disyllabic root containing a laryngeal and showing Schwebeablaut **ter-H- / tr-eH-* as appears also in Gk. τίτρημι, τείρω, Lat. *terō*, etc. (see Antilla 1969: 154). In either case the semantics of *tatarh-* does not pose any problem.[6]

dudupa(i)-, from *dup(a)i-* 'hit'.

up-pu-up-pa-, from simple stem *uppa-* 'bring' (?).

3.3. Other less attested Anatolian languages, due to their scanty attestation, give us but little and uncertain evidence for reduplicated present stems.

3.3.1. In Lydian we find the verbs *bi-fe-* attested also in Lycian *pi-bi-je* 'give' (cf. Hitt. pāi- 'id.'); *ta-tro-* 'to give an order', from *tro- / tor-* derived from the root **ter-* 'sound'; cf. Hitt. *tar-* 'speak, call' (see Pokorny 1959: 1088–89; Shevoroshkin 1967: 44, 48).

3.3.2. Finally, in Palaic there are no certain forms which can show any clear traces of reduplicated present stems. The two verbs *pariparai*

and *susuru* are rendered as doubtful by Kronasser (1966: 573). The former may be a Hittite loan, cf. Hitt. *par-prai-* from *parai-* 'blow', see 3.1.2.1 above.

4. The Indo-Iranian languages

4.0 In Indo-Iranian two major classes of reduplicated present formations must be distinguished: (a) those formations that function as pure presents in the historical period of the language and (b) formations that are based on the reduplicated present stem but acquire modal functions such as the desideratives which later on develop into the future tense. The intensives could perhaps constitute a third class; they will be dealt with in separate sections since they present peculiar features of their own.

4.1. The material from Sanskrit The overwhelming majority of the roots that form a present with reduplication belong to the 3rd class according to the traditional classification of the Sanskrit verbal roots, and are of the athematic type. We find about 50 such roots, grouped in the following listing according to the radical vowel:

4.1.1. Roots containing -ă̆ (short or long):

4.1.1.1. Most of them reduplicate with -ĭ-:

gā : *jígāti* 'go'

ghrā : *jíghrāti* 'smell', in the 3 pl. *jighrăti* with thematic vowel -ă-

nas- 'unite, join' : *nimṣ-* 'kiss', from **ni-ns-*. The reduplicated form has an intensive or even perfective meaning (see Mayrhofer *KEWA* s.v.). An interesting parallel is furnished by the cognate forms from Greek νέομαι (from *νέσομαι) : νίσ(σ)ομαι 'return; be safe' (from *νι-νσ-ομαι) with similar aspectual nuances with the Sanskrit forms (see 2.2 above).

(1) *mā* : *mímāti* 'measure'

(2) *mā* : *mímāti* 'bellow, roar', but in the 3 pl *mimănti* (< **mi-m-e-nti*) with thematic vowel; attested only in the earlier language; probably an old onomatopoeic like the Hittite *mema-* 'speak', Gk. μιμίζω, OCS *mimatĭ*, *mumatĭ*, etc.

yā 'go': iye, ímahe (1st pl.), but according to Insler (1972: 99) these are root presents.

śā : *śíśāti* 'sharpen', but also *śíśīte*.

hā : *jíhīte* 'go forth' with -ī- for -*ā*-, inflected only in the middle (see Macdonell 1910: 340); but cf. also *hā* : *jáhati* 'leave', reduplicating with -ă-

vac : *vívac*- 'speak'

vaś : *vívaś*- 'desire', but forms with a-reduplication are also extant.

vyac : *vivyac*- 'extend'

sac : *siṣac*- 'accompany', but also 3 pl. *sascati* with a-reduplication and transfer to the thematic conjugation.

The following forms *pā* : *píbati* 'drink' (b<p as the result of the underlying neighboring laryngeal; cf. also Lat. *bibō* and OIr. *íbid*), *sad*- : *sī́dati* 'sits' (the long -ī- in the reduplication is due to compensatory lengthening after the loss of the -s- in the cluster -*sd*-, i.e. **si-sd-e-ti*), *sthā* : *tíṣṭhati* 'stand', and *han* : *jíghnati* 'strike; kill' show i-reduplication but have completely passed to the thematic conjugation.

4.1.1.2. The following roots reduplicate with -ă-:[7]

dā : *dádāmi* 'give'

dhā : *dádhāmi* 'put, place'

dhan- : *dadh*-, in *dadhanti* 'they run'

bhas- : *babhasti* 'devour', and with syncopation of radical vowel *bapsati* (3 pl.).

mad : *mamatsi* 'be exhilarated'

man : *maman*- 'think', as in *mamandhi* (imperative), *ámaman* (imperfect).

yas : *yayastu* (imperative active) 'to be heated'

rā : *rárate* 'give' (3 sg. middle) but also *rirīhi* (imperative)

kāśate : *cakṣ*- 'appear', from PIE **ḱe-ḱos*- with syncopation of the radical vowel, or perhaps a syncretistic form, i.e. showing athematic conjugation but with zero grade of the root after reduplication.

ghas : *jakṣ*- 'eat' (from proto-Indic **ja-ghas*- <PIE **ghe-ghos*-), built on the perfect *jaghasa* : **ja-kṣ-ima* from *ghasati* (Mayrhofer *KEWA* s.v., with more references); later it was thematized yielding forms like the perfect *jajakṣa*, etc.

sas : *sasásti* or *sásasti* 'sleep'.

has : *jakṣ*- 'laugh', see participle *jakṣat*-.

4.1.2. Roots with long -ī-. The reduplicative vowel is always -ĭ- (oscillating between long and short with no apparent rule to govern the quantity of the vowel). These are: *dī* : *dīdī*- 'shine', as in *dīdyati*, *dīdihí*

or *didīhí*, etc.; *dhī* : *dīdhī-* 'think'; *nī* : *ninī-* 'lead'; *bhī* : *bibhī-* 'fear'; *mī* : *mimī-* 'damage'.

4.1.3. Roots with short -ĭ- reduplicate with -ĭ-, and those containing -ŭr- (short or long) with -ŭ-:

ci : *ciki-* 'note; observe', cf. *cikéṣi* with guṇa

diś : *didiś-* 'point'; Whitney (1945: 73) is not sure about the forms *dídeśati*, *dídeṣṭu*, etc. Thieme (1929: 53, n. 2), however, treats them as old reduplicated presents. Other forms are *dididdhi*, *didiṣṭana*, and the medial imperfect *didiṣṭa* (see Joachim 1978: 94).

nij : *ninij-* 'wash'

mikṣ : *mimikṣ-* 'mix'; cf. imperative *mimikṣvá*, 3 pl. indic. present *mimikṣati*; probably a desiderative of *miś*; cf. also *miḥ* 'mingere' (Whitney 1945: 120), Gk. μίσγω (<**mi-mzg-ō*?).

We also have: *vic* : *vivic-* 'sift'; *viṣ* : *viviṣ-* 'be active'; *yu* : *yuyóti* 'separate'; *su* : *susu-* 'press'; *hu* : *juhu-* 'sacrifice', as in 3 sg. pres. *juhóti* with guṇa; *hū* : *juhū-* 'call'.

Whitney (1945: 212) lists a reduplicated stem *pĭpĭ-* which must come from a root *pā*, and occurs in a few middle forms prefixed with *ud-*. But there are homophonous forms from two roots (1)*pā* 'drink' and (3)*pā* 'rise against' and often are confused. Whitney (1945: 96) notices this adding that we probably have "only a curiously specialized use of (1)*pā* + *ud*".

4.1.4. Roots with ṝ reduplicate with -ĭ-:

ṛ : *íyarti* 'goes'

ghṛ : *jígharti* 'drip'

tṝ : *títrat-* (participle) 'cross'

pṛ : *píparti* 'pass'. Cardona (1967: 767 ff.) argued that *píparti* 'fill' is the same verb with *píparti* 'pass', and therefore it cannot be taken as a reduplicated present stem from *pṝ* 'fill'. In fact, Narten (1969b: 139 ff.) has shown that the Sanskrit verb *píparti* never means 'fill' in the *Rigveda*.

pṛc : *píprc-* 'mix'

bhṛ : *bíbharti* 'bear, carry'; cf. Gk. ἐσ-πιφράναι in 2.1.

sṛ : *sísarti* 'flow, run'.

The root *hṛ* 'take' reduplicates as *jíharti* and is considered to be a variant of *bhṛ* (see Mayrhofer *KEWA* s.v. *bhárati*, with more references).

The roots *vṛt* 'turn' and *kṛ* 'commemorate' are the only exceptions and reduplicate as *vavart-* and *cakṛ-*, respectively.

4.1.5. Vowel initial roots reduplicate with long initial ī-, and this is due to the presence of initial laryngeal, i.e. these formations are of the shape *#ī-C-* from PIE **Hi-HC-*, thus:

ī́kṣate 'see' : *akṣ-* as in *ákṣi-* 'eye'; this verb must be related to Gk. ὀπῑπεύω, see 2.2. above.

ī́jate 'drive' (< **Hi-Hg-e-toi*) vs. simple present *ájate* 'id.', is an analogical form built on the model of *tíṣṭhati* (see Strunk 1977: 971 ff.; Bammesberger 1982: 104–106).

ī́ṣate 'be in motion' from root *iṣ*, just like *ī́jate* above.

ī́hate 'be eager, crave, yearn', comparable to Gk. ἴ̯χανάω and Av. *izyeiti* 'id.' and noun *azi-* 'craving'.

4.1.6. The other types of reduplicative present formations of Sanskrit are the intensives and the desideratives. There is no fixed system as far as the reduplication of the intensives is concerned, the most likely explanation is that it represents a mixture of different types: (a) #CaC-CaC-, i.e. an exact copying of the root, e.g. *dárdharsi* with dissimilation from **dhárdharsi* from root *dhṛ* 'hold', (b) #CeC-CaC-, where the reduplicative syllable consists of the same consonantal unit as the root itself but the vowel in the reduplication is *-e-*, e.g. from root *kṛ* 'make' we have the intensive *carkarmi*, from *han* 'strike, kill' we have *janghanti*, etc., the palatal consonants being proof of the original front vowel of reduplication, (c) #CVC-ĭ-CVC-; this type is a variant of (a) but with the addition of a "connective" vowel -ĭ- between reduplication and root; the quantity of this vowel is determined by the shape of the root after the reduplication has taken place, i.e. it is long if a single consonant follows, and short if two consonants follow. E.g. *bhar-ī-bharti* but *bhar-ĭ-bhrati*, *var-ī-vṛj-at-*, etc.

4.1.7. The desiderative formations in Sanskrit are a distinct well attested formation of IE antiquity, but with a diminishing rate of occurrence from the earlier to the later periods of the language. Generally speaking, the characteristic features of this class are i-reduplication (except for roots with -u- which reduplicate with -u-) with accent falling on reduplication and a *-sa-* suffix, but some irregularities and idiosyncracies in certain cases are also present. E.g. from root *dā* 'give' we have *dídāsa* 'desire to give', from root *nī* 'lead' *nínisa-*, from *vṛt* 'turn' *vívṛtsa-*, from *guh* 'hide' *júgukṣa-*. For more on formative details of these forms one should look at Macdonell (1910: 387 ff.).

4.2 The Avestan material As in Sanskrit, in Avestan too reduplication is quite productive in the present system. However, despite the fact that the two languages belong to the same branch of Indo-European and certain forms are shared by both of them, there are also many more which are independent creations within Iranian itself.

4.2.1. Verbs with reduplication in -ĭ-:

ci : *cikaē-* / *cici-*; cf. Skt. *cikéti*

dī 'see' : *didaē-*, also *daidi-*; cf. Skt. *ádīdhet* (imperfect)

mā 'measure' : *-mīmā-* in the compound *fra-mīmā-* 'permit'; cf. Skt. *mímāti*, *mímīte*

yā 'demand' : *ii-* (from **HiaH-* / *HiH-*, see Beekes 1988: 166).

hac 'accompany' : *hišac-* / *hišc-*; cf. Skt. *síṣakti*.

garz : *jigərəz-* 'complain', with no Sanskrit cognate; an onomatopoeic formation is not unlikely.

zan 'beget, bear' : *zīzan-*; cf. Gk. γίγνομαι, Lat. *gignō*, and simple present Skt. *jan*.

tar 'cross' : *titara-*; cf. Skt. *títarti*

danh 'teach' : *didans-* / *dīdah-*; cognate with Gk. διδάσκω (see Klingenschmitt 1970: 84, n. 5) and Lat. *discō*.

ji 'live' : *jigaiia-*

dar 'hold; have' : *didara-*?; a very doubtful form, but cf. Skt. *dadharti* 'id'.

The following are the only vowel-initial roots that have a reduplicated present form, the first reduplicates in -i- and the second in -a-:

ar 'rise' : *īr-* (< **Hi-Hr-*); cf. Skt. *íyarti*, *ír*te, Gk. ὄρνυμι, etc.

iz 'covet' : *iziia*; according to Klingenschmitt (1971: 163) from proto-Iranian **əi-əzh-*, with a-reduplication but hardly visible.

4.2.2 The following roots with initial consonant-cluster #sC- have a reduplicated present stem; in the reduplication the cluster is broken down to simple #h- (=*s-).

mar 'memorize' : *hišmara-*; a hapax in *Yt* 10,45, probably an instantaneous creation (see Kellens 1984: 193).

spas 'watch' : *hisposa-*; cf. Lat. *speciō* 'to look, behold', Gk. σκεπ-/σκοπ- as in σκέπτομαι 'to look about', σκοπός 'watchman', from **speḱ-* with metathesis.

spa 'launch' : *sispa-*, reduplicating #s- as s- not h-.

sta 'stand' : *hišta-* / *-xšta-*, a thematized form as is seen by the usage of this stem in other tenses beside the present system.

4.2.3. stems with reduplicative vowel -a-:

dā 'give; put, place' : *dadā-* / *dad-*[8]

zā 'abandon' : *zazā-* / *zaz-*; cf. Skt. *jáhāti* / *jaháti*.

zā 'go' : *zaz-*; cf. Skt. *jíhīte*

yah 'boil up' : *yaēšiia-*, a *-ya* present; cf. Skt. *yas-* : *yayas-* 'id.'.

rah 'be unfaithful' : *rārešiia-*, a *-ya* present; IE **res-* like Gk. ἀρνέομαι (**r̥-ne-s-*) (see Mayrhofer 1954: 75 ff.).

rud 'hold back' : *ruraud-*, a pluperfect (?), see Beckes (1988: 166); cf. also Skt. *rudh* 'restrain'

zuš (in *ā-zuš-*) 'be pleased' : *zūzzuš-*, also present *zīzuš-*; cf. Vedic *jujuṣṭana*, a perfect participle from root *juṣ* 'enjoy'.

xšnu 'satisfy' : *kuxšnu-*

5.2.5. Intensive presents:

From a morphological point of view this is an athematic present with reduplication. The reduplicative syllable consists in copying the initial consonant of the root plus the radical vowel; the root alternates between normal and zero grade. Some examples:

kar 'celebrate' : *carəkərə-*

γžar 'flow' : *γžarə-γžara-*

jan 'strike' : *-jaγna-*; cf. Skt. *han-*.

The root *var* 'run' reduplicates with long -ā-, thus *vāura-*. Probably the same is seen in *sū* 'swell' : **sāsū-* inferred from the adjective *sāsəuuišta-* in Aog 59 (see Kellens 1984: 195).

5.2.6. With the exception of some roots with -u- which reduplicate in -u-, the class of desiderative presents use i-reduplication (as was also the case with the similar Sanskrit formations), preceded by the initial consonant of the root; the root is in the zero grade, followed by the suffix *-ha-* (= Skt. *-sa-*). Some examples of this formation are:

tac 'run': *tixša-* 'desire to run'

dab 'harm' : *dibža-* 'wish to harm'; cf. Ved. Skt. *dípsati*.

hac 'accompany' : *hixša-*

6. Material from Italic Since the thematic conjugation has been generalized in Latin (with only a few relics of the athematic type, e.g., the verb *sum* 'to be' preserves the old athematic conjugational system), the only reduplicated present forms extant are of thematic type. Vestiges of reduplicated presents are found also in other ancient Italic dialects. Italic agrees with Greek in using the same vowel -i- for

present reduplication. Is this an archaism or a common innovation? Most likely the former. I was able to assemble the following evidence:

Lat. *discō* 'learn', from **di-dk-skō*, see Gk. διδάσκω.

Lat. *gignō*, like Gk. γίγνομαι

Lat. *sīdō* from **si-sd-ō*, Umbr. *ander-sistu* 'intersidito' for **sisd(e)tō*.

Lat. *sistō*, Umbr. *sestu*, cf. Gk. ἵστημι, etc.; but also unreduplicated Lat. *stāre*.

Lat. *serō* 'sow' from **si-sH-ō*; cf. Gk. ἵημι; related to Hitt. *sai-* 'press down; sow' (Gamkrelidze-Ivanov 1984: 688–89).

Lat. *bibō* 'drink' from **pi-pH-ō*; cf. Skt. *píbati*.

**didō*, seen in Vestinian (= Sabellian) *didet* 'dat', Pelign. *dida* 'det', Umbr. *dirsa*, *dersa*, *teřa* 'det', and also *dirstu*, *teřtu* 'dato'; cf. Gk. δίδωμι, Skt. *dádāmi*, etc. Brugmann (1916: 109) sees possible relics of the athematic conjugation in the forms *red-dimus*, *red-ditis*, as coming from **red-dămos*, *red-dătes*. Perhaps, in the same way *serimus*, *seritis* and *sistimus*, *sistitis* from **si-să-mos*, **si-să-tes* (cf. Gk. ἵεμεν, ἵετε, etc.), **si-stă-mos*, **si-stă-te(s)* (again like Gk. ἵστᾰμεν, ἵστᾰτε). The quantity of the radical vowel of these forms, short -ă-, is a feature of the ablaut pattern characteristic of the athematic conjugation and supports Brugmann's view.

7. Material from Old Irish In Old Irish reduplication has ceased to be of any significance as a morphological marker for the present, and the available evidence for reduplicated presents is very scanty. It survives only in a few fossilized forms which are not felt as reduplicated but are thematized and incorporated into the verbal system of the language like all other verbs. Nevertheless, for the comparatist it is obvious that these forms are relics of an old type going back to PIE. Such forms are:

-sissedar, a deponent verb, as e.g. in *ar-sissedar* 'nititur, innititur', or *fo-sissedar* 'protects, confesses'; it is the PIE root **staH-* 'stand'; cf. also *-airissiur* 'I remain standing' for **(pari)-sistio(r)* beside Gk. ἵστημι, Skt. *tísthati*, Lat. *sistō*, Umbr. *sestu*, OHG *sestōm*.

íbid 'drinks' from **pibid* (PIE **pi-pH-e-ti*)

gnéu, *gníu* 'does' from proto-Celtic **gegnō*, **gignō*; cf. Latin *gignō*, Gk. γίγνομαι, etc.

gén 'know' (from **gegn-*) in *ad-génsa*, formally a future, but probably reflecting the old reduplicated present with the additional marker *-sa-* for the future, comparable to the Indo-Iranian desider-

atives, see 4.1.7 and 4.2.6, above; cf. Gk. γιγνώσκω (see Stokes 1863: 396).

The isolated Middle Irish verb *der-drethar* 'he sounds, cries out' may be taken as a reduplicated verb, originally of a *-yo* type, will full (intensive?) reduplication like the Gk. παμφαίνω.

Hamp (1973: 163) takes the OIrish verb *íad* 'close' as deriving from **epi-dhi-dhə-*, that is from PIE **dheH-* 'put, place' with reduplication as in Greek and Sanskrit; cf. also Skt. *api-dhā-* 'to close'; Greek provides us with the strong parallel θύρας ἐπέθηκε 'he closed the doors'; *ia-* from **epi* as in *é(i)thech* 'perjury' which comes from **epi-teg-*.

7.1. Probably we could add a few more forms which function as (suppletive) futures to presents but originally must have been reduplicated present stems. Thus, *ebra-* and *ebla-* serve as futures of *ernaid* 'bestows' and *a(i)gid* 'drives'; they go back to an earlier **piprā-* (cf. Gk. πί(μ)πρημι) and **piplā-*, respectively. If this is the case, then more such futures with reduplication may originate in older reduplicated present formations. Such can be in origin the *s*-futures which are characterized by reduplication and an *s*-enlargement just like the Indo-Iranian desideratives, like e.g. *-gígis* from *guidid* 'entreats', *cíchis* from *cingid* 'steps', and the like.

7.2. Elsewhere in Old Irish reduplication is a morphological marker of the long *ā-* subjunctives which semantically function as futures, e.g. *gignithir* (<**gi-genā-*), i.e. PIE root **ǵen-* 'bear; be born', *-cechna* (<**ce-cana-* with e-reduplication) from present *canid* 'sings', *-didma* (<**di-damā-*) from present *damaid* 'suffers, concedes', cf. Gk. δαμάζω, *-íba* (from proto-Celtic **i-ibā-* < PIE **pi-pHe-*), from present *íbid* 'drinks', cf. Lat. *bibō*, and other similar forms (see Brugmann 1916: 142; Thurneysen 1961: 402).

7.3. Finally, reduplication in the Irish verb is used also in the preterite and perfect tenses. Very frequently the formal distinction between the latter two is the use of the particle *ro-* prefixed to the preterital stem to turn it into a perfect.

8. Other Indo-European languages

8.1. Balto-Slavic. In Balto-Slavic the only evidence of a relic of reduplicated present stem is the present of the old IE roots **doH-* 'give'

and **dheH-* 'put, place' which show *e-* reduplication and which merge in Balto-Slavic into one form just like in Iranian. Hamp (1972a: 83–85) discusses the survivals of these roots in Lithuanian and Old Church Slavic. Hamp's argument runs as follows: the proto-forms must have been **de-d-mi* and **dhe-dh-mi*, with weak stem the origin of which most likely was the imperative singular through the second singular of the present. In proto-Balto-Slavic both forms merged into **dedmi*. It is, however, in the meaning 'I lay' (i.e. **dhe-dh-mi*) that **dedmi* survived at any time: Lith. 1 sg. *dėmi* (< **dedmi*), 2 refl. *desė-s* (< **de-t-se-s*), 3 sg. *dėsti*, *dėst*, 2 pl. *dėste*. Now the verb has passed mostly to the thematic conjugation *dedù*, *dedì*, *dẽda*, etc. In Slavic we find *ležǫ* (< **led-yǫ*) after the *-yo* class. In the meaning 'give' **dedmi* changed to **dōdmi*, probably under the influence of the aorist form **dō-s*, or under pressure for regularity and distinctiveness we end up with **dōdmi*, a stem with full-grade vocalism and recessive accent, beside **dedmi*. Thus the root **dō-* 'give' surfaces as: Lith. *dúmi* (< **dudmi*), *dúsi* (< **dutsi*), *dústi*, *dúst*; pl. *dúme* (< **dudme*), *dúste*; in Mod. Lith. it is generally thematic *dúdu*, etc. In OCS we find *damĭ*, *dasi*, *dastŭ*, *damŭ*, *daste*, *dadetŭ*. In *damĭ*, *damŭ* *-m-* stands for **dm*. Cf. also the thematic participle *dady* like Lith. *dúdās*.

8.1.1. The other type of present reduplication in Slavic is a series of secondary, almost exclusively onomatopoeic formations like: OCS *glagolatĭ* 'speak', *plapolatĭ* 'iactari', cf. also Chech *plapolati* 'flammen', OCS *mrumuratĭ* 'nagen', cf. Old Russian *moromrati* and a few more (see Brugmann 1916: 30; Vaillant 1966: 328–330).

8.2. Armenian. There seems to be no evidence for a present type with i-reduplication in Classical Armenian. The only form that might provide some evidence of an old survival of this kind of formation, *ǝmpem* 'drink', reconstructed by Meillet (1896: 155) as **ǝnd-hi-pem* < ***-pi-be-*, comparable to Skt. *píbati*, Lat. *bibō*, is not certain. Meillet himself omits this reconstruction from the 2nd edition of his *Esquisse* (see Barton 1965: 43). Also *nsti-* 'sit', presumably from **ni-sizde/o-*, may be another example of present with i-reduplication and zero grade of the root just like Gk. ἵζω, Lat. *sīdō*, Skt. *sídati*. This of course runs into serious difficulties and the reconstruction is not beyond all doubt (see Klingenschmitt 1982: 129 ff.).

8.2.1. There is, however, ample evidence for present formations with full or partial reduplication using as reduplicative vowels other

than -i-. The forms with full reduplication have primarily intensive meaning and are of two main types: (i) those of the type of Gk. παμφαίνω, μαρμαίρω, in other words with full reduplication, like *p'alp'alim* 'shine', with the haplological variant *p'alp'im* 'id.' (Barton 1965: 22), *bekbekim* 'break into pieces', *t'apt'apim* 'flutter', *koškošim* 'beat'. (ii) A subgroup of (i) consists of verbs with a nasal infixed between reduplication and root, as in *dandalim* 'loiter, dawdle', *dandacim* 'stagger', probably built on the analogy of forms like the previous one, and a few others. The nasal, of course, could be explained as the result of dissimilation to the following consonant (usually resonant), like Skt. *cañcūryate* 'moves quickly or repeatedly', *jañjabhyáte* 'to chew intensively', or Gk. τονθορύζω 'murmur'. (iii) Those roots with initial vowel like *azazim* 'dry up, wither', from the IE root **aǵ-* 'drive', *ololem* 'overflow' (like aorist *arari*, from present *arnem* 'do, make', cf. Greek aorist ἀγαγεῖν from present ἄγω 'lead, drive'). We say with vowel-initial speaking synchronically, because historically the root **aǵ-* in Indo-European has initial laryngeal, thus **Hag-*, and *ololem* derives from **pol-polem*, cognate wtih Gk. πίμπλημι, i.e. PIE root **pelH-* / **pleH-*; cf. unreduplicated *helum* 'pour' (see Meillet 1936: 113, Barton 1965: 42). With a nasal suffix we have *arcarcanem* 'stir up'.

8.2.2. Partial reduplication of the shape CV-CVC- appears in the following types of forms: (i) *dedewim* 'totter, stagger', *cacanim* 'undulate', *dadarim* 'stop, remain', *papakim* 'die of thirst', *p'op'oxim* 'change, alter, modify', *sasanim* 'be excited, be shaken', *t'at'awim* 'plunge'. (ii) There are a few instances of reduplicated stems of the type of Gk. ποιφύσσω, μοιμύλλω, with -oi- in the reduplicative syllable, like *cicalim* 'laugh' (< **go/ei-gel-yo/i-*); cf. Gk. γελάω 'id.'.

Mann (1968: 60) disusses a few forms that have parallels in other Indo-European languages, but their Indo-European origin is not always certain. For instance, he gives forms like *kčkčem* 'tear, cut', which is compared to Skt. *cicchide* 'cut off', Latin perfect *sciscidi* and Gk. σχίζω, or *k'ajk'ajem* 'undo, destroy', possibly cognate with Skt. *khatás* 'dug', *khatis* 'digging, from an IE root **(s)khey-*(?). Cf. also *marmar-* 'tingle', like Gk. μαρμαίρω.

8.3. Germanic. As in Old Irish and Balto-Slavic, likewise in Germanic we find vestiges of verbs with present reduplication, but they do not constitute a distinct class in the conjugation. The only established

type of reduplicated formations in Germanic is the preterites of the seventh class of the strong verb, as in Go. pres. *lētan* 'leave' : pret. *lēlōt*, or *háitan* 'call' : *haíháit*, etc., obviously an archaism reminiscent of the IE perfect and reduplicated aorist.

8.3.1. As relics of present stem showing reduplication the following may be mentioned:

OHG *sestōm* 'arrange, design', probably a loan from Latin *sistō*.

OHG *bibēm* 'shake', comparable to Skt. *bibheti*; cf. ON *bifa* 'tremble', OE *beofian* 'shake', OSax. *bibōn* 'id.'; cf. also OHG *bibēn*, *bibōn*, a back-formation(?) from a perfect stem **bhe-bhóiə-e-* 'ist in Furcht' (see Narten 1981: 10).

OHG *zittarōn* 'tremble', ON *titra*, compared to Gk. διδράσκω by Pokorny (1959: 204), but this comparison, I think, cannot stand.

Go. *reiran* (from **ri-rai-*) 'move, tremble', cognate(?) with Skt. *lēlā́yati* 'wavers, trembles', an intensive form from the root *lī* 'cling'. *reiran*, however, has raised many questions most of which still remain unanswered. For a survey of the problems involved and further literature see Lehmann (1986: 283–284).

OHG *rērēm* 'bellow, bleat, roar', OSax. *rārie* from proto-Germanic **rai-re-yo*.

8.3.2. We could probably add the onomatopoeic OHG *murmulōn*, *murmurōn*, and maybe some more of this latter type, but one should be cautious with such sound-imitating formations as they are rather mechanical creations and tend not to follow strict phonological rules; very frequently they even break the phonotactic rules of the language, and are thus extremely difficult to describe in patterns or in any way to predict.

8.4. Finally, Tocharian shows no traces of any reduplication in the present system, with the exception perhaps of the Toch. B subjunctive *tätt* which seems to continue the reduplicated stem of the PIE root **dheH-* 'put, place' (Hamp 1972b: 88). Otherwise, reduplication is only used in some forms of the preterite system, i.e. causative preterites and preterite participles (see Sieg & Siegling 1931: 346 ff.).

9. Conclusions: As was noted in section 1, the aim in this paper has been to collect and classify in some manageable way the evidence for the reduplicated present formations extant in the various Indo-European dialects. An effort was made to trace some general trend(s) in this type of verbs in the different dialects so that a reconstruction of the

prototypical forms that served as the model for further expansion may be facilitated. Also an effort was made to discuss the etymology of these verbs and give cognates from various Indo-European dialects, especially in the case of forms that show similar or identical formative details. Finally, the semantic aspect of the question was touched upon only in passing, the reason being the huge diversity and multiplicity of meanings of these formations in the different languages, so that to give even the broadest generalization possible would not be accurate. Extensive and detailed studies in individual languages are needed before any claims can be made on the semantics of the reduplicated presents in Indo-European.

The languages with the most evidence for reduplicated presents are Greek, Indo-Iranian and Anatolian. The Hittite evidence, of course, is more difficult to analyze in terms of Indo-European than that of the other two branches, due to the diverse origins of these forms in Hittite, as well as the heavy substrate and adstrate influence from non-Indo-European languages of Anatolia. However, the comparative method enables us to distinguish what is Indo-European and what derives from other traditions, and thus those forms at least that have etymological parallels in other Indo-European languages are of prime significance, even more so considering the early date of the Hittite documents. If Hittite belongs to an earlier level than the rest of Indo-European, in other words if the "Indo-Hittite hypothesis" is true, the Hittite material acquires special significance for our reconstructions of IE per se and Indo-Hittite in particular, and special handling of the evidence is needed. This question of course cannot be decided here, but it should be taken into serious consideration in such studies. In this respect, the work of Cowgill (1975 and 1979), Eichner (1975), and Oettinger (1979) are of prime importance for the study of the Hittite verbal system in relation to Indo-European. Cowgill's ideas, I believe, deserve more attention than they have received by scholars working on this question. Beside Hittite, a few other forms of certain IE origin are attested in some other "minor" dialects of the Anatolian branch of Indo-European.

Therefore, the Greek and Indo-Iranian material is our main source of information for this type of present formation. The significance of the evidence from these two branches is even greater when we consider the early date of the attested texts, as well as the fact that these are the only branches of Indo-European which directly attest what is generally taken as the most archaic conjugational type of the present system of the IE verb, the athematic conjugation. A number of considerations

suggests that the athematic conjugation is primary in IE, whereas the thematic is a later and secondary development but well into the predialectal period. This distinction is preserved in Greek and Indo-Iranian in other present formations and those with reduplication as well. This is an important point, as far as reconstructing the present system of PIE is concerned, because the athematic conjugation has been replaced by the thematic elsewhere in IE, and in later stages of the languages it completely disappears even from Greek and Indo-Iranian. In fact, this process is seen already in Vedic and Homeric Greek, our earliest texts from these languages.

The evidence for reduplicated presents in other IE languages, as can be seen from the analysis given in this paper, varies from language to language, but it is not as good as in the three branches mentioned above. The situation in Latin is well known: the verbal system has been regularized to such an extent that old types and formations hardly survived. Yet traces of reduplicated presents are found both in Latin and other Italic dialects. Almost all the attested forms from Italic are of direct IE inheritance, but they all shifted to the thematic conjugation, with the exception, perhaps, of *reddimus*, *redditis*, and also *serimus*, *seritis*, and *sistimus*, *sistitis*, if Brugmann's interpretation is correct (see section 5). From Armenian two forms can claim IE inheritance, *ǝmpem* and *ololem*. Germanic has very little to offer, all the evidence that we have seems to be of secondary origin. The only forms that could, on comparative grounds, be considered of IE antiquity are OHG *bibēm* (cf. Skt. *bibheti*) and Go. *reiran*, if it is related to Skt. *lélā̆yati*, but this remains questionable (see for instance the objections at Mayrhofer *KEWA* s.v.). The OHG form *sestōm* must be a loan from Latin *sistō*. Old Irish preserves some forms of clear IE origin: *-sissedar*, *íbid*, and probably *gnéu*, *gén* and *íad*. The verbs *ebra* and *ebla* have clear cognates in Greek and Latin. The Old Irish *s*-future with reduplication must be in origin a desiderative formation of the type attested in Indo-Iranian and, therefore, must be of IE antiquity. From Baltic and Slavic the only two forms of reduplicated presents that claim an IE origin are Lith. *dèmi* (of the athematic type), see also *dedù* (thematic), OCS *dežd*ǫ from IE **dheH-* 'put, place', and Lith. *dúmi*, OCS *damĭ* from IE **doH-* 'give'. Finally, if the Tocharian B subjunctive *tätt* reflects the reduplicated stem of IE **dheH-*, as Hamp claimed, then this is our sole evidence of a reduplicated present in Tocharian.

One type of evidence which is attested in virtually all IE languages and seems to play a major role in verbal formations is onomatopoeia. The verbs are of two types: (a) forms that can be traced back to PIE,

and (b) formations of the individual languages with no IE cognates. Both types are difficult to handle, due to peculiarities inherent to onomatopoeia in general: no systematic and uniform behavior regarding their phonology and morphology. Thus, etymologizing on such shaky grounds would be a futile enterprize. Therefore, not much attention to this type of material was paid in this survey. The best treatment that I am aware of of such forms in Greek, with a lot of comparative material from Indo-European, is Tichy (1983).

The following chart gives in a tabular manner the results of our effort to reconstruct the prototypical forms that served as the model for the expansion of the class. The first column gives the PIE roots and the other columns the attested forms or stems from the different dialects. The criterion for a form to be labeled as being of IE origin is to be attested by at least two independent branches of Indo-European, with every possibility of borrowing being ruled out. It is possible that some of these forms do not go back to PIE itself but they represent parallel developments in the individual languages. This is very difficult to decide with certainty, therefore it was deemed appropriate to include these forms in the chart. Also there might be some other verbs that should be included but, due to lack of comparative evidence, were left out. The three sections of the chart numbered I-III are interpreted to reflect the degree of prototypicality of the different forms with respect to PIE: group I can be said to represent forms of absolutely certain PIE antiquity, group II forms of possible PIE antiquity, and group III forms that may be attested in two or more different branches, yet their PIE origin is not certain, indeed they may be safely taken as later creations in the individual languages. Thus, this chart should not be taken as the definitive answer to the matter, but rather as an attempt for a reconstruction of the model for the reduplicated present formations in Indo-European, arranged in a convenient way for our comparisons.

Table 1. PIE roots and reduplicated present forms in various IE dialects.

PIE	Greek	I-Iranian	Anatolian	Italic	OIrish	Germanic	Baltic/ Slavic	Armenian
I.								
*doH-	δίδωμι	Skt. dádāti Av. dad-, daidi-	Lyd. bife- Lyc. bibije Luv. pipiya- pipiss-	Sab.didet Pel. dida Umbr. dirsa, dersa, teřa, dirstu, teřtu			Lith. dűmi OCS damĭ	
*dens-	διδάσκω	Av. didans-didah-		Lat. discō				
*dheH-	τίθημι	Skt. dádhāti Av. dad-, daidi-	Hitt. tittiya- Luv. lala(i)-		íad-		Lith. dèmi, dedù OCS deždǫ	
*ǵen-	γίγνομαι	Av. zīzan-		Lat. gignō	gnéu, gníu fut. gignithir			
*g^{w}aH-	βίβημι	Skt. jigāti						
*poH-	πιπίσκω	Skt. píbati		Lat. bibō	íbid			∂mpem(?)
*sed-	ἵζω	Skt. sī́dati	Hitt. asas-/ ases-	Lat. sīdō Umbr. -sistu				
*staH-	ἵστημι	Skt. tíṣṭhati		Lat. sistō Umbr. sestu	-sissedar			nista-(?)

Table 1. PIE roots and reduplicated present forms in various IE dialects. (*Continued*)

PIE	Greek	I-Iranian	Anatolian	Italic	OIrish	Germanic	Baltic/ Slavic	Armenian
*terH-/ treH-	τίτρημι τιτραίνω τιτρώσκω	Skt. títarti Av. titara-	Luv. tatarh-					

Note: We can add here the Tocharian B subjunctive *tätt* which may reflect the old reduplicated present stem of PIE **dheH-*.

II.								
*bher-	*πίφρημι, ἐσπιφράναι	Skt. bíbharti						
*deiḱ-		Skt. didiś-	Hitt. tekkusai-(?)					
*gonH-/ gnoH-	γιγνώσκω			gén				
*gheH-	*κίχημι	Skt. jíhīte, jáhāti Av. zazāiti						
*Hegh-	ἴχανάω	Skt. íhate						
*Hok^{w}-	ὀπῑπεύω	Skt. íkṣate						
*nes-	νίσ(σ)ομαι	Skt. nimṣati						
*pelH-/ pleH-	πίμπλημι						ololem	
*perH-/ preH-	πίμπρημι			ebra				
*seH-	ἵημι			Lat. serō (< *sisHō?)				

*ser-	ἰάλλω	Skt. sísarti	Hitt. sesariski-			
*weḱ-		Skt. vivaś vavaś-	Hitt. wewakk-			
III.						
*bhoH-		Skt. bibhéti		OHG bibēm(?) ON bifa OSax. bibōn		
*dreH-	διδράσκω	Skt. dídrāpayiṣati(?)				
*k^{w}e(i)-	παπταίνω	Skt. cikéti cikayat				
*neH-		Skt. ninī-	Hitt. nanna-			
*Hnek-	ἐ-νεγκεῖν		Hitt. nink-			
*reH-(?)		Skt. intens. lēlā́yati			Go. reiran(?)	
*(s)khey-		Skt. cicchide(?)				kčkčem(?)

ENDNOTES

[1]The following abbreviations are used in the text: Aog = Aogəmadaeca, Arm. = Armenian, Av. = Avestan, Gk. = Greek, Gmc = Germanic, Go. = Gothic, Hitt. = Hittite, Hsch. = Hesychius, Il. = Iliad, KEWA = Kurzgefasstes Etymologisches Wörterbuch des Altindischen, Lac. = Laconian, (P)IE = (Proto-)Indo-European, Lat. = Latin, Latv. = Latvian, Lesb. = Lesbian, Lith. = Lithuanian, Luv. = Luvian, Lyc. = Lycian, Lyd. = Lydian, Myc. = Mycenaean, OCS = Old Church Slavic, Od. = Odyssey, OHG = Old High German, OIr. = Old Irish, ON = Old Norse, OSax. = Old Saxon, Pel. = Pelignian, pl. = plural, PIE = Proto-Indo-European, Sab. = Sabellian, sg. = singular, Skt. = Sanskrit., Toch. = Tocharian, Umbr. = Umbrian, Yt = Yasht.

For laryngeals I use the orthographic convention of H, with no specification of its coloring, with the exception of cases when I cite other people's reconstructions, in which case I follow their practice, or when, for reasons of distinguishing a specific form from some other form, I use H_1, H_2, H_3 for the *e*-, *a*- and *o*-coloring laryngeal, respectively.

[2]For an objection to this interpretation and a critique of interpretations of the past, see Puhvel (1981: 252–261), who links it to Hitt. *halāi*- 'set in motion, thrust', as in *arha halāi* 'send off, dismiss, reject', *ta hurkin halenzi* 'they start the wheel', etc. *halāi*-, according to Puhvel, is a *hi*-conjugation verb reflecting features of the IE perfect, i.e. o-vocalism, thus going back to a stem **Hl̥loy*- from root **Hley*-. Therefore, ἰάλλω < **Hi-Hl̥y-o*, secondarily understood as a *-ye/o* verb of the type τιταίνω, τετραίνω, etc.

[3]A kind of "primitive" full reduplication is seen in the repetition of a whole word, usually to add emphasis and intensity or to express plurality in general. This is better known under the name of epanadiplosis, as in Skt. *pacati-pacati* 'cooks continuously', *piba-piba* 'drink more and more', parallel to *āmreḍita* composition in the noun, as for instance Skt. *divé-dive* 'every day' or Mycenaean Greek *we-te-i-we-te-i* 'every year', Cypriot *a-ma-ti-a-ma-ti* 'every day', etc. This phenomenon is found in other parts of speech as well, like adverbs and particles such as Gk. προπρό, Skt. *prápra*, Lat. *iamiam*, OHG *soso*, etc; in pronouns as in Skt. *sása* 'even this', Gk. ἀλλήλων, Lat. *quisquis*, etc. Cf. also It. *alto alto* 'very high', *tutti tutti* 'all', *bello bellissimo* 'very beautiful', Mod. Greek καλά καλά 'very well', etc.

[4]For a recent treatment of the question of "Attic" reduplication see Ruijgh (1972). Historically, vowel-initial roots contain initial laryngeal.

[5]Tichy (1983: 229 ff.) offers the best and most complete treatment of these formations that I am aware of.

[6]See however the possible connection made earlier between Skt. *sísarti* to Gk. ἰάλλω and Hitt. *halāi*-.

[7]This "frozen" dative is seen also in proper names like Δαιμένης, Myc. *da-i-qo-ta* = Δαι-φόντης.

[8]Cf. also the association with the verb ταρχύω which is an Anatolian loan into Greek and its proper meaning is 'treat like a god'. The same stem appears in the Lydian theonym *trqqas* and Luvian *Tarhunt*- (see Chantraine 1968: 1095).

[9]This -a- is in origin a front vowel, probably -e-, as is shown by the palatalization of the velars in the reduplicative syllable, e.g., *cakṣ*-, *jakṣ*-, etc.

[10]The PIE roots **dheH*- 'put' and **doH*- 'give' merge into *dā* in Iranian. The same happens also in Balto-Slavic.

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GARRY W. DAVIS

What's in a word?: On integrating recent approaches to secondary associations, submorphemic units and morphological segmentation

Abstract. Submorphemic units occupy a dubious position between the phoneme and the morpheme in traditional (structuralist-generative) analyses. The present study places submorphemic units within their proper historical context, and concludes that submorphemic units often come about by lexical association (a term adapted from the traditional term "secondary association") . Furthermore, lexical association sometimes causes submorphemic units to develop into morphemes. It is argued, however, that the function and diachronic development of submorphemic units can be but roughly accommodated within the framework of traditional categories. An approach is therefore proposed that is based on prototype theory, which provides a powerful theoretical underpinning for lexical association, and on a dynamic model of the lexicon that will accommodate varying degrees of morphological segmentation among morphologically complex words. It is demonstrated that there is no advantage in forcing a segmentation of all morphologically complex words into discrete morphemes, and it is thus concluded that it is equally unnecessary to require such segmentation of words that contain submorphemic units. The conclusions reached here lend support to the view that the transition from phonology to grammar is a gradient one.*

1.0 Introduction. After many years of research within both the structuralist and generative paradigms in linguistics, the challenge of integrating submorphemic units into traditional views of the lexicon and morphology has remained unmet. In this paper, I will show that submorphemic units are the product of lexical associations, and that it is possible to accommodate their existence, if somewhat roughly, between the traditional structuralist categories of the phoneme and of the morpheme. I also show that the reshaping of the lexicon can only be adequately described as a diachronic continuum. For that reason, I will later argue that the best understanding of submorphemic units is reached if we revise our current overly restrictive concept of the dis-

creteness of the category of the morpheme, and if we reject the notion that morphologically complex words must necessarily be capable of segmentation into morphemes that are listed separately in the mental lexicon (Section 6.1-6.2). I will argue that these revisions are possible due to theoretical advances within the frameworks of prototype theory and of a dynamic model of lexical representation (Bybee 1985). Although the types of lexical reshaping I discuss here occur in all languages over time, I have chosen the bulk of the examples used to illustrate this reshaping from the Indo-European language family, because these languages offer us the long recorded history necessary to observe diachronic change in the lexicon.

2.0 Secondary Associations. Units that connote meaning but that exist below the level of the morpheme are often said to result from "secondary associations". Secondary associations generally come about in either of two ways, the first of which is through a diachronic process of semantic and often phonological reduction. In this process, a morpheme is reduced in breadth or frequency of occurrence, which sometimes leads to a complete loss of productivity. Under this scenario, the erstwhile morpheme demorphologizes and is reduced to a cluster of meaningless phonemes that simply coalesces with the lexical item with which it had combined earlier (Hopper 1990). This is the case with English *seldom,* which derives from an Old English adjective *seld-* 'rare, strange'. The second syllable of *seldom* contains the remnant of the OE dative plural suffix *-um,* but *-om* has since been totally demorphologized. In other words, the *-om* has ceased to connote any meaning of its own or to mark any grammatical function in modern English.

Should the process of demorphologization stop short of causing the total demise of a morpheme, however, a secondary association-effect may result, which is evident in the phoneme cluster *glV-*[1] that connotes unmoving light when it occurs in *glint, glimmer, glow, gleam,* etc. This cluster derives from the Indo-European root **gel-* 'bright' (Wescott 1987), and the English reflexes that descend from this root are thus remnants of an earlier productive morpheme. A similar case of historical reduction is the onset *snV-*(< IE **snē-* 'nose') of *sniff, snivel, snort, snore, snot,* etc., which connotes nasal activity in many words.

Alternatively, secondary associations obtain when a meaning is associated with a cluster of identical or nearly identical phonemes that exists in different, often etymologically unrelated, words. The term

has traditionally been applied to this phenomenon too, because meaning is associated with these (non-morphemic) clusters of phonemes only secondarily, or solely due to the linguistic model of other words in the lexicon that contain this phoneme cluster and have a similar meaning (Bynon 1977:11[2]) (like the cluster *fl-* as in *flair, fling,* and *flaunt,* which will be discussed in Section 3.5 below). Thus the term *secondary* association is only descriptive and well-motivated for this second source of associations, and not for those that result from historical reduction. For this reason, and for the sake of brevity, I will henceforth refer to secondary association as lexical association, or more simply as association.

Specifically, I define association as the formation of linkages among words in the lexicon that manifest themselves as a process of constant lexical reshaping. Depending on its intensity, association makes its presence known in a variety of ways that range from the coining of folk etymologies to the formation of submorphemic units and the genesis of new morphemes. Though this understanding of association owes much to earlier studies of secondary associations, rime, and assonance (especially Bolinger 1950), I will later show that it can be easily reconciled with more recent work by Bybee (1985) on "lexical connections", and with the "schema" concept as it is used in prototype theory by Bybee and Slobin (1982).

3.0 Principles of Association. This section will discuss how lexical association motivates the reshaping of individual lexical items and how this reshaping, in some cases, helps form submorphemic units. In addition, this section will show that submorphemic units can sometimes become actual morphemes.

3.1 Associations among words. Bolinger (1950:131) showed how associations can be interwoven among sets of semantically similar words in the lexicon. Figure 1, below, is a simplified version of a diagram that Bolinger used to illustrate this interweaving.

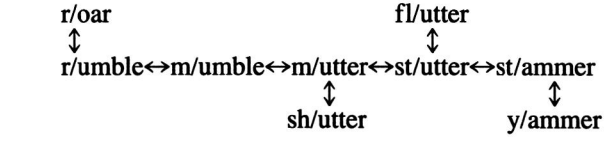

Figure 1: Lexical Linkages

Figure 1 shows that words in the lexicon can be linked with one another owing to synchronous similarities in their meanings and phonemic composition. This linkage later causes some facet of meaning of the first word to be imputed to the cluster of phonemes it shares with its synonym. Thus, through linkage, new meaning becomes associated not with the entire word but rather with a part of a word, in such a way that the shared phoneme clusters begin to connote meanings distinct from the morphemes in which they occur.

3.2 Stages of Reanalysis, Productivity, and Promotions. The most limited effects of association are visible in folk etymologies that occur as sporadic reanalyses. Stronger effects of association occur when multiple words become associated. If the association persists and is of sufficient intensity, it can cause the genesis of a free or bound morpheme. I shall call these elevations of status promotions[3], and Figure 2 illustrates my contention that such promotions can best be described as points along a continuum of association that stretches between the phoneme and the morpheme.

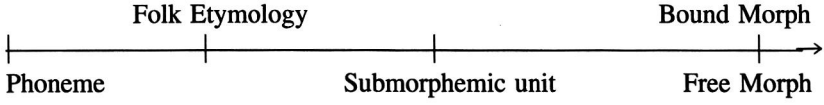

Figure 2: Diachronic Continuum of Possible Promotions

Simply put, we can say that promotions take place when associated words that formerly consisted only of one lexical morpheme are reinterpreted by native speakers as being morphologically composite (See Hock 1986:178-9).

3.3 Folk Etymology and Association. Folk etymology is the first and most limited stage in the productivity of an association. It can be defined as etymological reinterpretation that occurs because of a historically false association that gains currency among native speakers. For example, *sparrow grass* is sometimes carved out of *asparagus*, and *oodle* 'large or unlimited quantity' has apparently been promoted out of *boodle* (< Du. *boedel*).

The coining of the term *widget* perhaps due to the association of *gadget* with *hatchet* (Pound 1931:257-9) is an example of an association that is slightly more productive than a common folk etymology, and the phoneme cluster *-get* /-ǰet/ may therefore be in the process of

being reanalyzed as a submorphemic unit that connotes an instrumental function.[4]

3.4 Submorphemic Units. The genesis of a submorphemic unit might be described as an association that spreads across clusters of identical phonemes within a set of semantically similar words, thereby restructuring their form or meaning to comply with the associated lexical set (cf. Section 3.1 above), a process that I call submorphemic attraction[5].

An example of a submorphemic unit that is motivated by such an association is the final cluster *-ump,* which is said to connote 'awkward, heavy, lumpish' (Bolinger 1950:135) when it occurs in words like *bump, clump, dump,* etc. The initial cluster *slV-* of *slither, sleaze, slime,* etc. is a similar case. In these words, *slV-* references a kind of 'slipperiness' because the words that contain this phoneme cluster are associated. Similar examples such as the onset *tw-* 'twisting motion' of *twitch, twist, twine,* etc., or the final cluster *-ack* 'striking sound' as in *clack, crack, flack,* are legion[6].

Submorphemic units (Zelinsky-Wibbelt 1983; Wescott 1976) have also been referred to in the literature as root-forming morphemes (Bloomfield, L. 1933:244-6, Pike 1943:77 passim, Bloomfield, M. 1953:158-164) and phon(a)esthemes (Firth 1964, Householder 1946, Wescott 1976 and 1987). Structuralist and generative analyses generally do not treat these units as morphemes due to their limited ability to combine with free forms (Nida 1949:61) or with forms that occur in other combinations. In addition, it is sometimes said that a reanalysis of submorphemic units as morphemes might unnecessarily complicate a descriptive grammar of the language (Markel and Hamp 1960-1961). According to this view, if submorphemic units are morphemes, they should not occur exclusively with meaningless residue or cranberry morphemes. Thus in the case of *gleam, glimmer,* and *glint,* if we analyze *glV-* as a morpheme, we are left with the meaningless completions *-m, -mmer,* and *-nt.*

Empty morphemes pose an additional problem in traditional analyses. Aronoff (1976:11-15) has pointed out the problematic status of the cluster *-mit* (among others) as in *remit, commit, permit,* etc. The cluster *-mit* undergoes a phonological alternation to *-mis* when it occurs in latinate words before the suffixes *-ion, -ory, -or, -ive,* and *-able* (as in *permissive* and *remissory*). Despite its morphophonological predictability, however, *-mit* is devoid of meaning.

In Section 6.1, I discuss Bybee's (1985) framework of lexical

connections, which recognizes the existence of empty segments (like *-mit*), but does not force their segmentation from their base morphemes. In Section 6.2, I show that the same solution can be applied with great success to the problem of cranberry morphemes.

3.5 Submorphemic Productivity. Bolinger's (1950:129) example of the history of the French word *flair* is illustrative of a productive submorphemic unit. The word *flair* originally referred to a smell, but was attracted to a semantically close group of words with initial *flV-* such as *fling* and *flaunt*. The result of this attraction is that *flair* lost its earlier meaning and developed one more in line with the connotation *flV-* has within this group of words. The word family of *amble* (< Latin *ambulalre* 'to walk') underwent a similar development. The words of this family, *amble, ramble, scramble, gambol,* and *shamble,* whose various spellings attest to their disparate etymologies, became associated due to the influence of *amble* (Bolinger 1950:120). Since *amble* is a free morpheme, we are tempted to analyze the other members of this set as being composed of element + *amble* /æmbl/. Their varying, non-morphemic onsets (cranberry morphemes), (cf. Bolinger 1950:133) will be dealt with in Section 6.2 following.

Middle English *fnesan* 'sneeze' provides an example of a somewhat more advanced case of association at the submorphemic stage. Due to changes in phonotactic rules, the initial consonant cluster *fn-* became impossible sometime during the Middle English period, and *fnesan* changed to *snesan* in an apparently isolated development. Closer observation leads us to the conclusion, however, that *fnV-* shifted to *snV-* in this word because of the attraction of a pre-existing submorphemic unit, *snV-*, which connoted nasal activity (cf. Joseph 1987:2, Buck 1949:263), and which is still active in a large set of associated words in English (see Section 2.0 above).

The same kind of development may well account for the present form of English *speak* whose innovative structure is indicated by comparison with its cognates, German *sprechen* and Dutch *spreken,* both of which have the initial phoneme sequence *sprV-* in contrast to English *spV-*. No regular sound law can be formulated to explain the development of Old English *sprecan* to *specan* 'to speak'[7], although it is clear that the word internal *-r-* is etymological (Buck 1949:1255). It appears that the best solution is to postulate that a substantial associated lexical set existed in West Germanic (illustrated here with attested Old English forms) in which *spV-* connoted oral activity as in *spelian* 'to tell, narrate', *speówan, spætan* and *spyttan* 'to spit', etc. Over

time, the association of so many words connoting 'oral activity' that contained the phoneme cluster *spV-* in West Germanic caused the cluster to take on a submorphemic meaning that then served as a beacon to attract the precursor of OE *sprecan,* and reshaped it as *specan* (see Davis 1991).

English *glV-* (see Section 2.0 above) is also often recognized to be at a stage of association similar to the cases discussed above. *glV-* connotes 'unmoving light' on the submorphemic level, and it has given rise to words such as *glitzy, glint,* and *glare,* etc. In fact, the majority of modern English words that share this submorphemic unit have no true etymology independent of it.

The submorphemic unit *-ts-* in modern Greek offers an interesting parallel. *-ts-*, which enjoys a somewhat unique status in the phonology of that language, may derive in part from the early post-classical Greek suffix *-íki(o)n,* which carried an instrumental function (Georgacas 1982 as cited in Joseph 1987:11), but which no longer exists in the modern language. *-ts-* may have expanded markedly beyond the remnants of *-íki(o)n* by joining forces with other words that contained the phoneme cluster *-k(C)i-* and that connote diminutives, pinching, and thinness (Joseph, p. 16). Together these inputs ultimately caused the formation of one sound symbol *-ts-* that references these connotations in a large associated lexical set. This formation is probably due, in part, to the exotic, onomatopoeic status *-ts-* has in modern Greek (as Joseph has argued), but the spread of *-ts-* to places where it originally did not occur was also probably encouraged by its growing status as a submorphemic unit.

The inception of the English submorphemic unit *ker-* or *ka* is usually attributed to the general onomatopoeic influence of its linkage to the initial element *cr-* in words connoting crunching noises, such as *crunch, crackle,* etc. (Cassidy 1983). Cohen (1976:14-15), however, has suggested that this submorphemic unit may have originated as a direct splicing off of the initial *ker-/ka-* from words like *crash* and *crunch* when they are lengthened for emphasis as in *crrrash!* or *crrrunch!* In the lengthened form, the sequence *crrr-* might have developed an intervening schwa as in *ca-rash* or *ca-runch,* thus explaining the apparent free variation between *ker-* and *ka-* in words in informal use as in *kerplop* and *kaplop,* or *kerphlooey* and *kaphlooey.* The meaning of this submorphemic unit, 'big or intense', and its combination with so many other words in informal use that exist independently of it such as *plunk* vs. *kerplunk, whallop* vs. *kerwhallop, bang* vs. *kerbang* (Wescott 1976) indicate that its status, at least with-

in the boundaries of informal speech, is close to that of a morpheme.

3.6 Bound and Free Morphemes. When an association becomes very productive, a cluster of phonemes is promoted to the morphemic level. Examples of this type of direct promotion in which bound morphemes emerge include *-oholic,* which was originally promoted out of *alcoholic.* After successfully establishing itself in *workaholic,* it became productive as a bound morpheme in combinations like *chocoholic* and *spendaholic.* Consider also *-athon,* which arose from *marathon* to become productive in neologisms like *telethon, walkathon, bikethon,* and *share-a-thon.*

In English *parasol* and *parachute* (*para-* < Italian *parare* 'to shield, defend')[8], we can observe how a bound morpheme developed with the aid of an association that began on the submorphemic level. In *parasol* and *parachute,* the original meaning that the morpheme *para-* had in the source language is no longer present for the vast majority of English speakers, but the initial phoneme cluster *para-* has been reanalyzed as connoting 'air activity'. This is most likely because the parasol and especially the parachute are obviously used in this area. Thus, *para-* has been resuscitated and promoted to a bound morpheme that now occurs in combination with several other English words common in military parlance such as *paratrooper* 'military parachutist' *paramarine* 'airborne marine', *paraengineer* 'airborne engineer', *parasaboteur* 'airborne saboteur', *parabomb* 'airborne bomb', etc. It should be noted that the combinations discussed above are clearly distinguishable from blends like *brunch* (< *breakfast* + *lunch*) in that the lexical morpheme in these cases is not reduced.

In German (as in English), the letter *x* was originally borrowed from the alphabet for use in mathematical or pseudo-mathematical parlance as a symbol for 'unknown quantity or entity'. From this practice, the use of *x* has sprung up in German in combinations like *x-Leute* (*waren da*) 'an undetermined high number of people (were there)' and *x-beliebig* 'any desired unspecified large number', *x-fach* 'any desired high multiple', *x-mal* 'any desired number (of times)', and *x-te* 'the "howevermanyeth"'.

Lastly, we turn to the English example of *-o,* which was a sound added to interjections (Murray et.al. 1989,OED Vol. 20: 405). This *-o* occurs in substantives like *boyo, bucko,* and *kiddo,* of which *bucko* is probably the oldest. If the above etymology holds, the final *-o* was originally semantically empty. Later, due to its use with words like

bucko, -o seems to have developed a kind of vocative meaning, which attracted words like *hobo* (first attested 1889) 'drifter, bum' and *wino* 'one who habitually drinks wine, drunkard' to this group. From here, the *-o* apparently spread to pejoratives like *fatso* (*fats* + *-o*) 'fat person' and *el cheapo* 'cheap thing'.

Shortened words like *psycho* (< *psychopath*) and *klepto* (<*kleptomaniac*) (where the *-o* is a formerly semantically empty combining vowel) have joined this group in recent times (cf. Partridge 1984:928 and 651, Murray et.al. 1989, OED Vol. 12:759). The term *weirdie* 'wierd person' has been attracted to this group and reshaped as *weirdo* (first attested in 1955, cf. Murray et. al. 1989, OED Vol. 20:104). Similar words such as *sicko* 'one who is sick in the head, crazy' and *pinko* 'one who is pink, is a communist sympathizer' have also come into use recently. The final *-o* can now be analyzed as a morpheme marking 'someone or something that is habitually (and sometimes pejoratively) an X', or 'someone or something that habitually (and sometimes pejoratively) does X'[9].

In summary, it is clear that association is a powerful force that reshapes the lexicon over time by causing conformity among individual members of associated lexical sets, and, in some cases, by promoting submorphemic units to morphemic status. We also note that traditional structuralist categories have to be stretched somewhat in order to accommodate the existence of submorphemic units. The inadequacies of a traditional analysis of submorphemic units will be discussed in the next section.

4.0 Problems with Traditional Categories. It is puzzeling to note that some of the English word-initial submorphemic units frequently alluded to above (*glV-, flV-, snV-*, etc.) are absent from the group of recently promoted morphemes in English. That is, we have no clear cases where one of these submorphemic units has been promoted to a bound or free morpheme of the traditional type.

It is important to remember, however, that the new morphemes of submorphemic origin cited in the preceding section all happen to fit nicely into basic categories typically analyzed as existing in modern English, while morphemes that refer to notions like 'unmoving light', 'air', and 'nasal activity' may seem exotic from the perspective of English.

Note, for example, the problem associated with the onset *ker-/ka-* that meets the basic criteria required for morpheme status in structuralist analyses. This *ker-/ka-* can combine with free forms (*kerplunk,*

etc.) and carries a consistent and definite meaning of 'big or intense'. Its function might best be compared to the use of derivational or adverbial classifier morphemes in some languages. Interestingly, Rhodes and Lawler (1981:329-333) compare the function of many submorphemic units in English with categories in typical classifier systems (Rhodes and Lawler, p. 330) that mark concepts such as rigid, flexible, extended, and convex shape, as well as various types of movement along paths such as curved, back and forth, and constricted, etc.

Rhodes and Lawler conclude that many of the clusters that we usually classify as word-initial submorphemic units are really morphemes in a kind of classifier system that consists of three major subcategories. The first subcategory is that of true classifiers such as: *bl-* 'color' as in *blush, blond, blue,* etc.; *dr-* 'liquid' as in *drop, drink, drain,* etc.; *gl-* 'reflected light' as in *gleam, glitter, glaze,* etc.; *sn-* 'nose' as in *snout, sneeze, snot,* etc. In addition, Rhodes and Lawler's system recognizes a second subcategory of general modifiers that includes: *b-* 'rebounding' as in *bounce, bob, bobble,* etc.; *fl-* 'inadequate' as in *flunk, flaw, flop,* etc.; and *sn-* 'quick' as in *snatch, snap, snip,* etc. Rhodes and Lawler further recognize a third category of morphemes that includes onomatopoeic sound modifier morphemes like *ka-/ker-* discussed above.

Thus the analysis offered by Rhodes and Lawler may help us understand why (apparently) none of these putative word-initial submorphemic units in English are usually accorded morphemic status. If they are, in fact, currently operating as classifier morphemes, they have already reached the level of true bound morphemes and can obviously be promoted no further. Our hesitancy to analyze them as morphemes would result simply because the types of classifier categories described by Rhodes and Lawler are not among those traditionally recognized in English morphology.

5.0 Prototype Theory. Leaving aside for the moment the question of the morphemic status I claim for some putative submorphemic units, I return to the question of how association can cause increased productivity and lexical reshaping. Clearly, a more powerful theoretical underpinning is desirable than one that just says that identical sequences of phonemes can become associated. Such an underpinning can be supplied by prototype theory.

In prototype theory, paradigms that undergo morphological processes such as the strong verb categories of English are linked by a

clustering of lexical connections called a schema. As shown by Bybee and Slobin (1982), Bybee and Moder (1983) and Bybee (1985:129-131), a schema includes attributes characteristic of membership in a particular category. Categories are thus organized around a prototypical member or best exemplar that contains all attributes characteristic of membership in the group (i.e., has all the attributes embodied in the schema) (Bybee and Moder 1983:256). Unlike more traditional theories of category membership, however, which assume an 'all-or-nothing', 'either-or' , or 'in or out' relationship of a member to a category, in prototype theory as developed by Rosch and Mervis (1975), Rosch (1978)[10], and others, other members of the category stand in a family-resemblance relation (cf. Wittgensten 1953) to the prototype in which they may possess some, but not necessarily all, of the attributes characteristic of the category. The category will thus not be absolutely discrete in relation to the space around it, but will be "fuzzy-edged" (Givón 1984:13). A family-resemblance relation can be illustrated by English strong verbs that belong to the category of *string, strung*. The semantic attribute of past tense connects the verbs that belong to this category (see Figure 3).

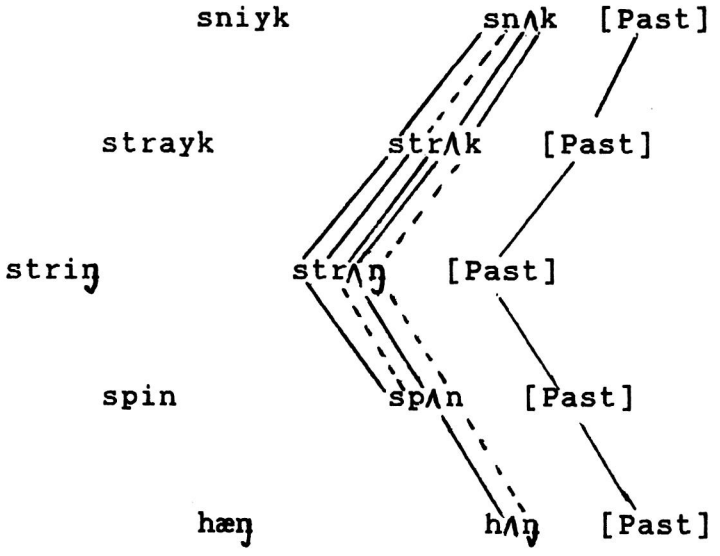

Figure 3: Strong Verbs of the *String: strung* Class (adapted from Bybee 1985:130)

The phonological features that define membership in this category are found among the past forms, not among the base forms nor among the relations between the base and past forms. The past forms thus define membership in the category, because the present forms of the verbs have few features in common (such as vowel grade or consonantal structure) while the past forms consistently share the defining features of the sequence [Λ] plus final velar and or nasal that in these verbs is the marker of past tense. Since *strung* has all of the attributes characteristic of this category, it is its prototype.

However, there are members of the category that deviate in one way or another from the precise set of attributes held by the prototype. This deviation can be explained by the course of diachronic change. As the category of *string, strung* expanded, it allowed verbs that shared only the property of a final velar consonant to join the category, as in the example *snuck*. Since this category continues to attract new members such as dialectal *snuck* and *brung,* it is apparent that lexical connections cause diachronic restructuring when new words are attracted to the prototypical members of the morphological category.

I propose to apply prototype theory in a similar way to the question of submorphemic units. Indeed, Bybee's use of the term lexical connection is not vastly different from my definition of association (see Section 2.0), because both refer to a marrying of semantic and phonological correspondences that produces the development of linked or "lexically connected" groups of words. The use of the schema concept in the analysis of submorphemic units, however, allows us to conceptualize more clearly the process of attraction and association examined in Sections 1.0 through 3.5 above, and perhaps to gauge its specificity. This is possible because the schema embodies the underlying phonological form and semantic attributes that attract new members to a group of associated words.

According to prototype theory, a best exemplar, or prototype, of a submorphemic unit may emerge over time, and its phonological and semantic features will then be those that best define membership in the group. This prototype will be the exemplar that attracts new members to the group and will be the model that new members will assimilate to phonologically and semantically in order to fit more snugly into the expanding group.

Such groups of words are indeed analogous to paradigms, because they share a common lexical stem whose form is prescribed by their respective schemas. *glVC-* 'unmoving light' (as in *glint, glimmer, gleam,* etc.), *snVC-* 'nasal activity' (as in *sniff, snivel, snort,* etc.) and

flVC- 'quick movement' (as in *flick, flap, flop,* etc.) can thus be considered the schemas of their respective submorphemic paradigms while the words that follow them in parentheses are all prototypical members of these groups, because their attributes conform in every respect to that of the schema. The semantics of would-be members of the group, and their phonological make up, are thus susceptible to an assimilation that can gradually reshape them[11]. However, membership in any such paradigm need not be absolute at any given time. The edges of the set will be "fuzzy" to the extent that some words may on occasion be regarded as members of the set while at other times they may not be. This is bound to be the case as we are speaking not about a static state of affairs, but rather of a process of reshaping that is ongoing.

The difference between paradigms of words that contain submorphemic units and those of morphologically complex words (i.e., words consisting of more than one morpheme) may be the closeness of the lexical connections and greater "fuzziness" around the edges of the paradigm of words containing submorphemic units. This may be due to the lack of specificity required by the prototype of the submorphemic group. The schemas *glVC-, snVC-,* and *flVC-,* for instance, may not have the specificity necessary to allow words that contain these submorphemic units to be mapped onto one and the same lexical representation as would perhaps be true of the paradigm of morphologically complex words (see Section 6.0). This is because a schema such as *glVC-* specifies only a phonological sequence of *g* + *l* + any vowel + any consonant, rather than a sequence containing a specific vowel plus a set of one or two specific consonants or types of consonants, as is the case with the strong verbs of the *string:strung* class (see Figure 3).

6.0 Lexical Representations. In her work on lexical representations, Bybee calls for an understanding of the mental lexicon that allows it to change with use. Her understanding of the lexicon contrasts sharply with the model used by many structuralists and generativists, which is based on the metaphor of a dictionary in which lexical entries are static. Bybee's conception of the lexicon, which is tied to the concept of lexical strength, suggests that each word has a lexical representation that is strengthened every time a word in processing is mapped onto that representation (Bybee 1985:117). Words of high frequency thereby gain in lexical strength, and their lexical representations become more autonomous. Increased autonomy, in turn, means

that the affected, morphologically complex words tend to be stored as whole autonomous units in the mental lexicon (Bybee 1985:133) while lower frequency morphologically complex items are stored with strong lexical connections to other words.

The observation that morphologically complex words can have autonomous lexical representation is important, because linguistic processing takes place when a word is matched with a representation stored in the mental lexicon. Making a good match depends on finding a lexical representation that has high phonological and semantic similarity with the prompting word. If the similarity between a prompting word and the representation of a semantically and phonologically related word is not sufficient for a direct match, a closely-related but distinct lexical representation can be established for the prompting word. Closely-related representations in Bybee's model are said to have lexical connections (Bybee 1985:117), a concept that we previously found to be similar to association.

Bybee's claim is that morphologically complex words develop greater lexical strength when they become more frequent in use, and that they thereby gain a more autonomous representation in the mental lexicon. Having an autonomous representation means in effect that morphologically complex words can be stored as units in the lexicon rather than as individual lexical and morphological segments that are then assembled on demand by means of grammatical rules.

6.1 Lexical Connections and Morphological Relations. According to Bybee, lexical connections occur primarily because of shared semantic features between words (Bybee 1985:118). If both phonological and semantic connections exist between morphologically complex forms, these words are said to have a special kind of lexical connection known as a morphological relation (Bybee, p. 123).

The closeness of the morphological relation depends upon the extent of the semantic relatedness of the items, the extent of phonological similarity among them, and the words' frequency of occurrence. A morphological relation results when the lexical representations of words are closely related in the mental lexicon. The frequency of the words is important because lower frequency words form closer lexical connections and morphological relations to other words than do high frequency words due to the lack of autonomy of their lexical representation. Lower frequency words are thus more dependent upon their base forms.

This difference between autonomous and less autonomous lexical

representations is illustrated by the strong and weak or regular verbs of modern English. Although strong verbs represent a small category in comparison to the number of regular verbs in the language, many strong verbs occur with great frequency. Studies of retrieval errors of these strong verbs show that producing their past tense form is a lexical retrieval task, rather than a task that requires the operation of a feature-changing rule to change an infixed vowel or the like (Bybee 1985:113, Bybee and Slobin 1982 and Bybee and Moder 1983). The evidence of the lexical representation of the past tense of English regular verbs, on the other hand, is indeterminate. Since there is evidence to support rule derivation as well as autonomous lexical representation, it seems likely that some regular verbs have autonomous lexical representations (Bybee 1985:114), while others are derived by adding an affix to the base.

Thus, Bybee characterizes the transition between non-autonomous and fully autonomous representations as a continuum that has no discrete cut-off points. As pointed out in Section 6.0, the extent to which morphologically complex words yield to segmentation will therefore vary according to the degree of autonomy that their lexical representations have reached.

Bybee also argues that the existence of overlapping and empty morphemes are two further compelling reasons why we should not insist on discrete segmentation of all morphologically complex words (Bybee 1985:128). Consider, for example, the semantically empty *-ro-* segment in the third person plural of the preterite of some Spanish verbs such as in the third person form *cantaron* (3 person plural preterite of *cantar* 'sing'). Morphemic segmentation is a problem here in that the final *-n* occurs as a plural morpheme in many other Spanish verbs, but the *-or-* segment seems to be part of this ending in *cantaron,* because it is not part of the verb's root. In a non-segmental analysis, however, the final *-n* of *cantaron* could be associated via a lexical connection with other instances of *-n* as a third person plural marker without forcing us to specify the meaning of the segment *-ro-*.

I propose a similar explanation for the cluster *-mit* and its alternate *-mis-* (as in *permit* and *permissive*) discussed briefly in Section 3.4 above. If the traditional requirement of segmentation is dropped, *-mit* can be analyzed simply as a semantically empty part of the words in which it occurs (like Spanish *-ro-*) which serves only incidentally to differentiate *permit* from, say, *perceive*. We can show the derivational relationship between words like *permit* and *permissive* by positing

lexical connections between the latinate words that contain *-mit* and the semantically related ones in which *-mis-* is used.

6.2 Lexical Connections, Morphological Relations, and Cranberry Morphemes. According to Bybee (1985:118), words that are related by both semantic and phonological connections are said to be in a morphological relation. I have argued that association creates submorphemic units when words of similar semantic content and identical or near-identical clusters of phonemes are attracted to a prototype of a group that is in the process of forming. Words that contain submorphemic units thus consist of a common cluster of phonemes that connote a common meaning. Bybee's "morphological relation" therefore applies as easily to submorphemic units as it applies to morphemes.

If we accept Bybee's (1985:127) premise that morphemes differ in the degree of their underlying segmentation in the lexicon, however, there is no reason to impose a strict requirement of segmentation on words that contain submorphemic units either. In representational terms, submorphemic units do not necessarily have a lexical representation independent of the words in which they occur (compare the discussion in Section 6.0 above), and each word that contains a submorphemic unit probably has its own representation in the mental lexicon with strong lexical connections (association) to other words in its paradigm. Thus, words that are traditionally said to consist of a submorphemic unit and a cranberry morpheme can be considered one unit with one lexical representation.

A submorphemic unit differs from morphologically complex words basically with respect to the extent of its occurrence, the closeness of lexical connections among the words that contain it (Compare the lack of specificity of the submorphemic schemas discussed in Section 5.0.), and its possible lack of longevity. A submorphemic unit's longevity could be threatened if the group of associated words dissipate that lend the association strength, thereby causing deterioration of the schema of the group. But as discussed above in Section 2.0, morphemes also sometimes meet their demise by demorphologization; so, even in this respect, the difference between a morpheme and a submorphemic unit is one of extent rather than type.

7.0 Conclusion. In Sections 1.0 through 3.6 above, I approached the problem of submorphemic units in traditional terms. I showed how the power of association could encourage a folk etymology, or cause a

submorphemic unit to develop. It was shown that submorphemic units may, under the right conditions, be promoted to morphemes.

In Section 4, I illustrated that the boundaries between the submorphemic unit and the morpheme are not absolute. I agreed with Rhodes and Lawler (1981) that our preconceived notions of what morphological categories exist in English prevent us from recognizing that some erstwhile submorphemic units have already become morphemes.

In Section 6.2, I argued that traditional approaches can benefit from the insights that are gained from prototype theory and from a dynamic model of lexical representation. Prototype theory and the lexical representation model have certain decisive advantages in describing the development and status of submorphemic units. Prototype theory explains in a more satisfactory manner how association causes reshaping in the lexicon due to the attraction of new members to prototypes that form there, and how the formation of these prototypes allows submorphemic units to develop into morphemes.

In addition, a dynamic model of lexical representation shows that there is an alternative to requiring that every morphologically complex word be capable of segmentation into individual morphemes. Since morphologically complex words can have a unified, non-segmented representation in the lexicon, there is no reason not to accord the same possibility to words that contain submorphemic units. This effectively solves the problem of cranberry morphemes and empty morphemes, because it is no longer necessary to dispose of "meaningless" residue after the submorphemic unit is segmented from its base. In addition, once the structural requirement of segmentation is dropped, some submorphemic units emerge simply as morphemes.

The question remains, however, whether we choose to view submorphemic units synchronically (i.e., in traditional terms), or as part of the continuum of language. If submorphemic units are viewed in a synchronic "snapshot", their strengthening over time will appear as abrupt "jumps" or promotions in their status when and if their distribution and frequency of occurrence accord them status as bona fide morphemes. If they are viewed diachronically, as per prototype theory and a dynamic model of the lexicon, submorphemic units emerge as points along a gradient scale that stretches between the phoneme and the morpheme (see Fig. 2).

Submorphemic units move up and down the scale according to their success in attracting new recruits to their prototype, and the extent of their segmentation from the words in which they occur varies in the same way that the extent of segmentation of morphologically complex

words varies. Some submorphemic units are close to being morphemes while others are farther away. Over time, some of these obtain the critical mass required for analysis as a traditional morpheme, while others remain stable or disperse.[12]

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ENDNOTES

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[1]V will henceforth represent any vowel while C will stand for any consonant. Also, for the sake of clarity and consistency, I will often cite examples in standard orthography. It should be understood, however, that what is implied is the phonemic version of the cited form. Thus *cr-* should be understood as /kr-/, *gl-* as /gl-/, and *fl-* as /fl-/, etc.

[2]Secondary associations are traditionally distinguished from associations that are primarily motivated by the desire to imitate natural phenomena with human language, i.e. onomatopoeia.

[3]John Haiman and I seem to have arrived at much the same notion of morphemic promotion independently of one another. Haiman (forthcoming) also speaks of promotion in the case of the new bound morpheme *-athon*.

[4]While it is true that coined terms such as *widget* and *telethon* may have been created to serve some specific commercial purpose, their creation and the rise of later forms based on their model are ultimately made possible by the same types of associations that are at work in other cases of submorphemic units.

[5]Dauzat (1946:17) must be given partial credit for this idea, which he refers to as *attraction paranymique* or an attraction due to similarity of root shape.

[6]Other initial clusters frequently said to connote meaning include (but are certainly not limited to): *slV-*, *sma-*, and *whV-*. Final clusters include: *-ang*, *-ap*, *-ash*, *-atter*, *-am*, *-amp*, *-oop*, and *-isk*. See Marchand (1969), Nida (1949) for further examples of submorphemic units.

[7]Bülbring (1902:217) attempted to formulate a sound change in Old English to account for loss of word-internal *-r-* in some few Old English words including *sprecan* > *specan* 'to speak'. However, there are more exceptions to this rule than examples of it. Furthermore, Bülbring's rule would do nothing to explain the apparently simultaneous loss of *-r-* in cognate forms from Old High German and Middle Dutch cited here unless we assume that the same rule operated in all these languages.

[8]This *para-* should not be confused with the *para-* of *paramedic*, or *paralegal* which derives from Greek *para-* meaning 'beside, alongside of'.

[9]Spanish loan words in English like *taco*, *bronco*, *gringo*, etc. could also have encouraged this association.

[10]See also Lakoff 1987 and MacWhinney 1989 for good summaries of prototype theory.

[11]It is interesting to note that Bloomfield (1911) also used the term assimilation, albeit in a somewhat loose way, to explain diachronic developments such as these.

[12]This view is thus not altogether different from that of scholars who advocate the existence

of a level intermediate between the phoneme and the morpheme (Blust 1988:2-3). However, as Hopper (forthcoming) points out, it is clear from the plethora of submorphemic units with varying morphemic quality that we should ideally be able to integrate a gradual transition from lexicon to grammar into our understanding of language.

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Figure and ground in the Creek auxiliary *oom*

Abstract. The *oom* auxiliary in the Muskogean language Creek serves a variety of particular uses that can be related through a semantic/pragmatic meaning of 'ground', in the Gestalt sense of unformed, diffuse, continuous, below, behind, etc. An examination of the use of *oom* with stative and active verbs, equational constructions, and question/answer pairs shows its specific semantic/pragmatic interpretations to be 'enduring', 'essence', 'ancillary', 'constative', 'expected', and 'given'. The paradigmatic absence of the *oom* auxiliary signals the Gestalt meaning of 'figure', specifically 'temporary', 'accidence', 'immediate', 'performative', 'surprising', and 'new'. The specific semantic/pragmatic interpretations of *oom* and its paradigmatic absence are seen to be a result of context such that prediction of which specific meaning will occur in a particular sentence is impossible.

1. Introduction. The general semantic/pragmatic function of the *oom* auxiliary in Creek, a Muskogean language, is to signal the event or participant to which it is suffixed as grounded, but the particular instantiations of its semantics/pragmatics can vary widely.[1] I use the term 'grounded' in the sense that Wallace (1982) uses the Gestalt term 'ground'. The semantics/pragmatics of 'ground' vs. 'figure' will be explained in section 3. Booker (1980:201,186) segments *t* from *toom* in Creek, as I do in 1b below, and says that *t* might be historically derived from the subject marker **t* and that *oom* is from Proto-Muskogean **o-mi* 'be, do', ''a compound of the focus element **o* and the auxiliary **mi*''. Booker (1980:202) glosses synchronic Creek *oom* as 'be'. Nathan (1977:109–110) does not segment *t* from *toom* in Florida Seminole, but refers to *toom* as a single morpheme and says that *toom* and *took*, the latter of which we will not discuss in this paper, are ''secondary verb roots whose optional usage as verb suffixes probably relates more to style than to anything else''. Nathan does hint, giving no specific argument, that they do have ''semantic import'', but concludes that in Florida Seminole ''the majority of the evidence indicates that their presence in a verb is mostly a matter of individual preference''. To begin, consider the following data:[2]

(1a) ča-čapahk-ii-s
1sII-angry ∅ g.-st-ind
'I'm angry'

(b) ča-čapahk-ii-t-oom-s
1sII-angry ∅ g.-st-T-aux-ind
'I'm an angry person'

(2a) ča-law-ii-s
1sII-hungry ∅ g.-st-ind
'I'm hungry'

(b) ča-law-ii-t-oom-s
1sII-hungry ∅ g.-st-T-aux-ind
'I'm a hungry person'

Like all Muskogean languages, Creek has three participant agreement paradigms, first labeled Types I, II, and III by Munro and Gordon (1982). Type II, used in 1–2, generally records a non-control experiencer or patient.[3]

There are a great many Creek verbs which function like those in 1–2 with respect to *oom*. In the (a)-sentences without *oom*, the stative forms of these verbs refer to a circumstantial state, tied specifically to the present. In the (b)-sentences with *oom*, the stative forms of these verbs refer to an enduring state or characteristic. Thus, one of the characteristics of the 'grounded' *oom* morpheme, to be discussed in more detail in section 3, is an unbroken state. Dowty (1975) makes such a distinction with respect to English verb forms and uses the terms accidence (temporary) and essence (enduring).

The goal of this paper is to show that in Oklahoma Creek the auxiliary *oom* has a clear semantic/pragmatic import, though its particular semantic/pragmatic instantiation often depends on subtle contextual meaning. Booker's (1980:202) gloss of *oom* as 'be'—though sometimes an adequate gloss in, for example, equational sentences—is not semantically/pragmatically broad enough to capture all of the uses of *oom*.[4] We will see in section 3 that the accidence/essence distinction evident in examples 1–2 is not general enough either to capture all of the uses of *oom*. Section 2 of this paper is a brief discussion of the form of *oom*. Section 3 is a detailed discussion of the semantics/pragmatics of *oom*. In section 3, we will examine the use of *oom* with stative and active verbs, equational constructions, and question/answer pairs. Spe-

cific semantic/pragmatic interpretations of the general 'ground' meaning of *oom* will be seen to be 'enduring', 'essence', 'ancillary', 'constative', 'expected', and 'given'. The conclusion in section 4 is a discussion of the theoretical problems of uniting the specific meanings of *oom* under the umbrella term 'ground'.

2. The Form of *oom*. The morpheme *oom* has several phonetic variants: [o͡om], [o͡ow̃], [o͡oy̆], [o͡o]. That its underlying form is /oom/ is indicated by the form [o͡om] before V-initial suffixes:

(3) naafkit*oom*eys ---> [naafkido͡omes]
'I'm hitting him'

The forms [o͡ow̃] and [o͡oy̆] are in free variation with [o͡o*m*] before V-initial suffixes.

Before the /s/ of the 'indicative' suffix *oom* is realized as [o͡o]:[5]

(4) kasappiit*ooms* ---> [kəzəppiido͡os]
'It's cold'

The following question/answer sequences show that the *t* is indeed segmentable from *toom*:

(5) nâ̂aki-n is-hakeyhk-it-oom-ă̆
something-N inst-cry 1.g.-T-aux-interr
'What is he crying about?'

(6a) naafk-ay-ii-n-oom-s
hit 1.g.-1sI-st-N-aux-ind
'Because I'm hitting him'

(b) naafk-ay-ii-t-oom-s
hit 1.g.-1sI-st-T-aux-ind
'I'm hitting him'

As 5 indicates, *t* is realized as /it/ with an epenthetic /i/ if preceded by two or more consonants.[6] Both 6a and 6b are acceptable Creek sentences, but only the *n* affix in 6a is appropriate for the type of grounding inherent in a clause that gives reason for another specifically mentioned event, as 6a does for 5. The sentence in 6b, identical in every way to that in 6a except for the presence of *t*, is unacceptable as

a response to 5. Because the *n* used as a verbal suffix preceding *oom* is rare in my data, I will not consider it further in this paper.[7]

3. The Semantics/Pragmatics of *oom*.

3.1 Event Semantics/Pragmatics. In Section 1, we saw that *oom* serves to signal an enduring state (essence). There are other specific interpretations of the semantics of *oom* which do not indicate that a person or thing is in an enduring state, as in the following:

(7a) kafi yikč-ii-s
coffee strong Ø g.-st-ind
'The coffee is too strong'

(b) kafi yikč-ii-t-oom-s
coffee strong Ø g.-st-T-aux-ind
'The coffee is too strong'

(8a) kasapp-ii-s
cold Ø g.-st-ind
'It's cold'

(b) kasapp-ii-t-oom-s
cold Ø g.-st-T-aux-ind
'It's cold'

Each of the (a)- and (b)-sentences in examples 7–8 is glossed in English the same, but Creek speakers explain that the context for the use of each is different. Example 7a, without *oom*, is typically said immediately after someone tastes some coffee and notices that it is too strong. Example 7b, with *oom*, is said by someone warning someone else that the coffee is too strong. Example 8a could be said by someone who just steps in from the cold outside. Example 8b could be said by someone warning someone else that it is too cold outside. Without *oom*, the (a)-sentences in 7–8 have an immediacy (figure) of experience. With *oom*, the (b)-sentences in 7–8 have an ancillary (ground) function of warning someone that tasting the coffee or going outside could be unpleasant. The *oom* morpheme, then, can provide the utterance with an illocutionary force other than a simple assertion (Austin 1962). Thus we see already from the meaning of *oom* in 1–2 versus its meaning in 7–8 that its specific content relies heavily on contextual pragmatics. Examples 7–8 can easily have interpretations that are consistent with the essence/accidence semantic distinction. For example, 7b can be interpreted as referring to a particular brand of coffee that is too strong. And example 8b can be interpreted as referring to a geographical location that is generally cold. Conversely, both of the (b)-sentences in 1–2 can be interpreted as making assertions about oneself that are relevant to some other event. For example, 1b can be inter-

preted as an illocutionary warning to someone that if he does something that the speaker doesn't like, the speaker might react angrily.

Thus, *oom* does not mean specifically essence or relevance to some other event. And the absence of *oom* does not mean specifically accidence or immediacy of experience. In *oom* and its absence, we appear to have a morpheme that is ambiguously semantic or pragmatic, semantic in its interpretation as an essence/accidence distinction, pragmatic in its encoding of Grice's (1975) relevance maxim. We will soon see that essence and relevance to another event are not all of the specific semantic/pragmatic interpretations of *oom*. For now, we may use the terms 'ground' to cover the meanings of *oom* and 'figure' to cover the meanings of the paradigmatic absence of *oom*, though we will question in our conclusion the legitimacy of assigning even these very abstract and fluid contents to this opposition. I am using the terms 'figure' and 'ground' in the sense of Wallace (1982), who argues for the relevance to linguistics of these Gestalt psychology terms. Wallace contends that verbal categories such as imperfectivity, past tense, future tense, intransitivity, and the modalities of hypotheticality, negation, potentiality, and doubt are ground-like in that they are similar to the characteristics of what Gestalt psychologists call perceptual ground: unformed, diffuse, continuous, below, behind, etc. Conversely, verbal categories such as perfectivity, present tense, transitivity, and the modalities of reality, actuality, and certainty are figure-like in that they are similar to the characteristics of what Gestalt psychologists call perceptual figure: discrete, local, bounded, above, in front, etc. Wallace argues that figure and ground have relevance to nominal categories, subordination, and larger discourse concerns as well.

Wallace is not the only linguist to have called on the Gestalt concepts of figure and ground, or their conceptual synonyms foreground and background, or the more general 'degrees of salience'. Some recent work relying on these concepts include Hopper (1979), Hopper and Thompson (1980;1984), Langacker (1987), Waugh and Monville-Burston (1986), Lakoff (1987), and Davis and H. Hardy (1988). Hopper and Thompson (1980:288), for example, found in texts a high percentage of features of high transitivity in foregrounded clauses and a relatively low percentage of these features in backgrounded clauses. Foregrounded clauses are typically those that report event sequence, while backgrounded clauses are those that fill in with information and commentary not part of the event sequence. Our concern in this paper is not with textual backgrounding or with transitivity,

but this paper should make a contribution to the discussion of the powerful explanatory concepts of figure and ground.

Thus far, we have seen the semantics/pragmatics of ground in *oom* with its use to signal enduring states (essence) and states that are pragmatically ancillary. We might assume that *oom* is used only with non-active verbs. But as the following examples show, the *oom* auxiliary may freely occur with active verbs:

(9a) litk-ahaan-ey-s
run ∅ g.-int-1sI-ind
'I'm going to run'

(b) litk-ahaan-t-oom-ey-s
run ∅ g.-int-T-aux-1sI-ind
'I'm fixing to run'

(10a) ǰo͡o-n iči-hočiif-ey-s
Joe-N 2sII-name l.g.-1sI-ind
'I hereby name you after Joe'

(b) ǰo͡o-n iči-hočiif-it-oom-ey-s
Joe-N 2sII-name l.g.-T-aux-1sI-ind
'I'm naming you after Joe'

Example 9a makes the statement that the speaker intends to run, using the intentive morpheme *ahaan*. Example 9b, with both *ahaan* and *oom*, grounds the event of running with respect to some other activity. That is, the speaker is doing something in preparation to running, and 9b is actually a report on that event, say, stretching one's muscles, rather than on the event of running. Example 10a, without *oom*, has the curious effect of serving as a performative. In uttering 10a, the speaker performs the activity of 'naming'. The event and the speech act are one and the same. Example 10b, with *oom*, grounds the activity of naming such that by uttering 10b the activity of 'naming' is not performed, but merely described. It is a constative (Austin 1962). The ancillary interpretation of the event with *oom* in 9b is much like that of the sentences in 1–2 and 7–8 with *oom*. The constative with *oom* in 10b is not durative, but it is ground in contrast with the figure performative interpretation of the event without *oom* in 10a, just as the illocutionary warnings and promises of 1–2 and 7–8 with *oom* are ground in contrast

with the figure assertions of 1–2 and 7–8 without *oom*. Thus, the interpretation as ground of *oom* with active verbs is no different from its interpretation with non-active verbs.

Thus far, in all examples of *oom* versus the paradigmatic absence of *oom*, the English glosses yield the same lexical verb though the event may be ground or figure, as revealed by subtle contextual clues provided by native speakers. The following examples may be clearer in that the presence of *oom* yields in English a different lexical verb:

(11a) sata-n ča-yaač-ii-s
apple-N 1sII-want ∅ g.-st-ind
'I want an apple'

(b) sata ča-yaač-ii-t-oom-s
apple 1sII-want ∅ g.-st-T-aux-ind
'I like apples'

(12a) ča-palalak-ii-s
1sII-crippled ∅ g.-st-ind
'I've got arthritis'

(b) ča-palalak-ii-t-oom-s
1sII-crippled ∅ g.-st-T-aux-ind
'I'm crippled'

In each of the examples of 11–12, the use of *oom* versus its absence yields a different event or state in English, but in Creek, the difference is simply that the event is ground with *oom* and figure without *oom*. In 11a, the absence of *oom* with *yaač-* yields the English 'want', but in 11b the presence of *oom* yields the more durative English 'like'.[8] In 12a, the absence of *oom* with *palalak-* yields the acute event of having 'arthritis', while its presence in 12b yields the more thoroughgoing and chronic event of being 'crippled'. Example 12a was explained by one Creek speaker as meaning that the speaker would be saying that his/her fingers were turning as when one has 'arthritis'. But in 12b, the event is more grounded as having already reached completion such that the speaker is now 'crippled'. The examples in 11–12 are in their semantics no different from those of 1–2 and 7–8, in that in all three sets of examples, the presence of *oom* indicates a more durative or grounded event while absence of this morpheme signals a momentary, figure-like event. Examples 11–12 could easily be interpreted as reflecting Dowty's (1975) essence/accidence distinction. But again, each of the sentences with *oom* can be interpreted as ancillary to some other event. For example, 12b used as an excuse to avoid doing some chore could

mean 'I've got arthritis' or 'I'm crippled'. In this interpretation, the *oom* morpheme is used to assert that the event so marked has relevance to some other event. The semantic difference between 'I've got arthritis' and 'I'm crippled' is of little import beside the pragmatic effect of indicating that the speaker is so debilitated that s/he cannot do the chore. We will return to this issue of the connection between the semantics and pragmatics of *oom* in the conclusion.

3.2 Equational Semantics. Thus far we have seen *oom* suffixed only to verbs, but it is also used to assert the existence of a participant, as in the (b) sentences that follow:

(13) nâak-it-oom-ǎ
something-T-aux-interr
'What is it?'

(14a) yalaaha-t-is
orange-T-ind
'Why, it's an orange'

(b) yalaaha-t-oom-s
orange-T-aux-ind
'It's an orange'

(15a) hoktii-t-is
woman-T-ind
'Why, it's a woman'

(b) hoktii-t-oom-s
woman-T-aux-ind
'It's a woman'

In 13–15, it appears that the *oom* auxiliary has a lexical meaning of 'to be', but even when *oom* does not occur in the (a)-sentences of 14–15, the clauses appear in English with the equational verb 'to be'. All of the sentences in 14 and 15 are acceptable responses to the question of 13, but the (a)- and (b)-sentences differ slightly in meaning. The (b)-sentences are perhaps what we might consider the normal unmarked way to say that a particular thing or person is an 'orange' or a 'woman'. The (a)-sentences are glossed as 'Why, it's an NP'. Speakers explain that there is an element of surprise in recognizing that the object identified is indeed what it is. In 14a, the object in question might be a green orange and be confused in the mind of the speaker with a lime. The speaker is asked what it is and suddenly recognizes that it is an orange. And in 15a, it might be a question of whether the person in question is a man or a woman. The speaker suddenly recognizes that it is indeed a woman and utters 15a. Thus, in the (a)-sentences there is an element of figure-like foregrounding of the iden-

tity of the NP. In the (b)-sentences, the identity is more grounded as being not so surprising. The differences between the presence and absence of *oom* in 14–15 are clearly related but not identical to the essence/accidence distinction. Essence leads to satisfied expectation, the meaning of *oom* in the (b)-sentences of 14–15. Accidence leads to surprise, the meaning of the absence of *oom* in the (a)-sentences of 14–15.

3.3 Question/Answer Pragmatics. In 9–10, we explored in brief the operation of *oom* as a suffix on active verbs and found that it grounds active events just as it grounds non-active events and participants. In the following, we will explore further not only manifestations of grounding with respect to active events, but how this grounding functions in preferred answers to questions. Consider the following question/answer set:

(16) nâăk-is-t-oom-ă̌
something-inst-T-aux-interr
'What is wrong?'

(17a) lit-êy = k-ey-s
run = h g.-1sI-ind
'I just ran'

(b) liitk-it-ó = h = m-ey-s
run 1.g.-T-aux = h g.-1sI-ind
'I just ran'

The *oom* suffix in 17b is derived with the H grade, which generally signals immediate aspect (Haas 1940). The question in 16 can be understood in the context of the addressee limping around on what are obviously sore legs. The best response is that given in 17b with the *oom* suffix. Example 17a, without the *oom* suffix but with the H grade in the verb stem, is not an acceptable answer to the question in 16. Speakers report that 17a is used simply to say that one has just run, but without consequence. Example 17b occurs with the *oom* suffix because the activity of running is grounded information with respect to there being something wrong. This pragmatic interpretation of *oom* is obviously related to the ancillary interpretation of *oom* already discussed.

Grounding can be built into the question itself such that it affects the possible best answers with respect to the presence or absence of *oom*, as in the following:

(18a) is-t-oom-íčk-áŋk-ă̌
inst-T-aux-2sI-pII-interr
'What did you do?'

(b) atootk-íčk-áŋk-ă̌
work l.g.-2sI-pII-interr
'Did you work?'

(19a) atootk-ay-áŋk-s
work l.g.-1sI-pII-ind
'I worked'

(b) atootk-it-oom-ay-áŋk-s
work l.g.-T-aux-1sI-pII-ind
'I did work'
'I've been working'

The best responses to 18a and 18b are 19a and 19b, respectively.[9] In response to the question in 18a of what s/he did, example 19a simply asserts that the speaker worked. It does not contain the *oom* suffix, and there is no grounding of the event, either with respect to an enduring state or with respect to producing some other state or event. Example 19b, with *oom*, states that the speaker 'did work'. The event is grounded by virtue of its already being given in the question of 18b. Example 19b is an acceptable response to 18a, but if it is so used, it has one of two special interpretations. First, the speaker may be perceived to be 'smarting back' to the questioner. The motivation for the 'smarting back' interpretation is consistently given as that the questioner has asked the question several times and is persistent in getting an answer. The grounding *oom* suffix in the 'smart' answer signals the grounding present in a question that has been asked repeatedly, e.g. 'I worked, since you keep asking', or 'I've told you already, I worked'. It appears then, from 19b, that another pragmatic interpretation of the ground in *oom* is given information. The English gloss that occurs second in 19b reflects the second interpretation possible for 19b as an answer for 18a. This gloss reflects the grounding of the event so that the sentence is interpreted as stating that the speaker has been working for a while. In other words, the event is grounded in the sense that it has been occurring for a while and is not an isolated figure-like event.

The scope of the necessary backgrounding for the use of *oom* in

the response to a question extends to any possible participants as well as the event itself, as is demonstrated with objects in the following:

(20a) nâaki-n oh-atootk-íčk-áŋk-ǎ
something-N loc-work 1.g.-2sI-pII-interr
'What did you work on?'

(b) aatami oh-atootk-íčk-áŋk-ǎ
car loc-work 1.g.-2sI-pII-interr
'Did you work on the car?'

(21a) aatami-n oh-atootk-ay-áŋk-s
car loc-work 1.g.-1sI-pII-ind
'I worked on the car'

(b) aatami-n oh-atootk-it-oom-ay-áŋk-s
car-N loc-work 1.g.-T-aux-1sI-pII-ind
'I did work on the car'
'I've been working on the car'

The best responses to 20a and 20b are 21a and 21b, respectively, mirroring the acceptability of the responses in 19 to the questions of 18. Even though the event *ohatotkita* 'to work on' occurs in the question of 20a, the response in 21a without *oom* is the best. The entire proposition is treated as figure-like since the information that it is the car the speaker worked on is new. Sentence 21b may be used as a response to 20a, but only with the sense of one of the two special grounding interpretations mentioned above for 19b as an answer to 18a. Response 21b is best as an answer to question 20b, in which not only the event but also the patient *aatami* 'car' is mentioned. Thus, as in the response 19b to 18b, the response of 21b uses *oom* to ground the entire proposition by virtue of its being mentioned in the question of 20b.

4. Conclusion. As we have seen throughout this paper, the effect of the *oom* auxiliary suffix is to ground the participant or event to which it is suffixed, while its paradigmatic absence signals the participant or event as figure-like. These ground/figure semantics/pragmatics take numerous instantiations, as the following summary table indicates:

Table 1

OOM = GROUND	∅ = FIGURE
ENDURING	TEMPORARY
ESSENCE	ACCIDENCE
ANCILLARY	IMMEDIATE
CONSTATIVE	PERFORMATIVE
EXPECTED	SURPRISING
GIVEN	NEW

We can see that the 'oom = ground' column contains semantic/pragmatic instantiations that are consistent with the Gestalt perceptual category of 'ground' and that the '∅ = figure' column instantiations are consistent with the Gestalt perceptual category of 'figure'. We are led to positing these very general categories of meaning since no one existing linguistic semantic/pragmatic category will cover adequately all of the uses of *oom* and its paradigmatic absence. The question now is whether it is good analytic practice to assign a unitary meaning or gloss to *oom*. There are two problems. First, the term 'ground' and 'figure' are at once so abstract and fluid in their possible particular instantiations that they may be used to gloss many different morphemes and constructions in a particular language. See D. Hardy 1988 for a discussion of the *t* and *n* nominal and verbal suffixes in Creek for example. The second problem, which is related to the first, is that even if we accept these very general glosses for *oom* and its absence, prediction of the specific semantic/pragmatic instantiation is impossible. Remember in particular how the enduring, essence, and ancillary interpretations of *oom* depend on context alone, not morphological or syntactic formal realization. Rather than positing a consistent abstract meaning for *oom* or its paradigmatic absence, I propose that the semantics/pragmatics of *oom* are 'emergent' in Hopper's (1987) sense of 'emergent grammar'. Hopper comments,

> However consistently it can be predicted that a certain particle or aspectual form will function in a particular role in the discourse, it is rare that the reverse is the case—that a particular form is restricted to a single specifiable discourse role. (1987:141)

Hopper's conception of an emergent grammar is one that does not contain morphemes with abstract unified meanings. Instead, "Similarities spread outwards from individual formulas, in ways that are

motivated by a variety of factors . . .'' (147). One of these factors is ''contextual similarity''. This is obviously the motivation for the disparate but related meanings of the use of *oom*. As is normal with a morpheme that has numerous semantic/pragmatic instantiations, there is little use in identifying the lexical content of the *oom* morpheme with 'to do' or 'to be', though each of these glosses might be appropriate in a given context. As we have seen, it is even impossible to assign a clearly semantic as opposed to a clearly pragmatic function for *oom*. Instead, it seems more felicitous to say that all of the uses of the *oom* morpheme are *related* through a semantic/pragmatic sense of grounding, and that its specific semantic/pragmatic instantiations are a result of its interaction with the circumstance of the sentences in which it occurs and/or with the circumstance of the speech situation.

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ENDNOTES

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[2]Abbreviations used in this paper are as follows:

=	infix or portmanteau	ind	indicative
I	Type I	inst	instrumental
II	Type II	int	intentive
III	Type III	interr	interrogative
1	first-person	loc	locative
2	second-person	l.g.	lengthening grade
∅ g.	zero grade	pII	past II
aux	auxiliary	s	singular
h g.	H grade	st	stative

[3]For semantic interpretations of these Type markers in Creek, see Martin (1987;1991) and D. Hardy (1988).

All of the verbs in 1–2 are derived by means of the ∅ grade, grades in Creek being tonal and vocalic changes within the verb stem used to signal aspectual differences (Haas 1940). The

$\emptyset$ grade indicates that the event is without a historical, experienced inception. The *ii* stative morpheme frequently combines with the $\emptyset$ grade to signal stativity. The *s* morpheme signals indicative mode. The *t* morpheme will be briefly discussed later.

[4]Booker has since the completion of her 1980 dissertation indicated to me through personal communication that she interprets *oom* within a discourse framework.

[5]Haas (1977:198–201) recognizes and describes the loss of the segmental /m/ before /s/ in Creek /oom/ and finds that the nasalization of the /oo/ is unstable with frequent non-realization of the nasalization on /oo/. Nasalization of the /oo/ remains unstable among speakers providing data for this paper.

[6]The lengthening grade in the verbs of 5 and 6, signalled by a lengthening of the ultimate vowel of the stem unless it is already long or is followed by a sonorant in the same syllable, generally indicates incompletive aspect (Haas 1940). The Type I markers in 6 record a controlling subject. In 5, the Type I marker is not segmented because it is $\emptyset$ for third person, and in 6 the Type II marker is not segmented because it is $\emptyset$ for third person. The *is* prefix in 5 records an instrumental or some other peripheral-to-event participant, here an oblique cause.

[7]See Schuetze-Coburn (1987) and D. Hardy (1988) for discussion of the semantics of *n*.

[8]Note that *sata* in 11a is suffixed with *n*, while it is not suffixed with *n* in 11b. The difference has much to do with the 'specific' semantics of *n* versus the 'generic' semantics of $\emptyset$. See Davis and H. Hardy (1988) for the semantics of noun marking in Alabama and Schuetze-Coburn (1987) and D. Hardy (1988) for the same in Creek.

[9]The 'past II' *áŋk* tense morpheme in 18–19 is appropriate for time periods extending from the day before the speech situation to approximately a month before the speech situation.

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HONG CHI

Noun incorporation: A Chinese case?*

Abstract. Noun incorporation (NI) is a morphological process that derives lexical items. Mithun (1984) finds four related types of NI, Rosen (1989) two. While many Mandarin VN compounds exhibit characteristics of Mithun's Type I and Type II NI, these typologies appear to be inadequate for Mandarin Chinese, an isolating language without a case marking system. Idiomaticity seems to play an important role in Mandarin VN compounds, where different degrees of separation between the V and the N are allowed. This goes against the criteria for NI. On the other hand, Chinese linguistics can benefit from the notion of noun incorporation, in that when the N in a VN compound is specific, it can no longer be treated as a component of the compound.

1. Introduction. Noun incorporation, as defined by Mithun (1984), is a morphological process in which a noun stem is compounded with, or incorporated into, a verb stem to yield a larger, derived verb stem. In Mandarin Chinese, compounding of V + N is very common. However, the demarcation between V + N compounds and verb-plus-object phrases is not clear at all, and there is still a great deal of disagreement over what constitutes a compound (Li & Thompson 1981:45). The purpose of this paper is to examine whether the notion of noun incorporation, as a morphological process, is useful in analyzing V + N compounds in Chinese.

2. Definition of Noun Incorporation. Noun incorporation (hereafter NI), as discussed by Mithun, can be illustrated by the Markilese examples (1a) and (1b) (Micronesian; Harrison 1976):

(1a) Ngoah kohkoa oaring-kai.
I grind coconut-these
'I am grinding these coconuts.'

(1b) Ngoah ko oaring.
I grind coconut
'I am coconut-grinding.'

(1a) is a transitive construction with an independent direct object and (1b) is an intransitive construction with the object incorporated into the

verb. In languages with overt case-marking systems, the incorporated noun is more clearly distinguished from the independent object, as the following Tongan sentences show (Churchward 1953):

(2a) Na'e inu 'a e kavá 'é Sione.
PAST drink ABS CONN kava ERG John
'John drank the kava.'

(2b) Na'e inu-kava 'a Sione.
PAST drink-kava ABS John.
'John kava-drank.'

Tongan is an ergative language. The subject of the transitive sentence (2a) is in the ergative case while the subject of the intransitive sentence (2b) is absolutive. That is, since the object in (2b) is incorporated, the sentence becomes intransitive, and its subject is in the absolutive case.

Mithun (1984) identified four kinds of NI. The first is lexical compounding, in which a verb and its direct object are juxtaposed to form an especially tight bond. The V stem and N stem remain separate phonologically; however, the N loses its syntactic status as an argument and the VN unit functions as an intransitive predicate. The second type, while having the same characteristics as the first, manipulates cases and advances an oblique argument into the case position vacated by the incorporated direct object. The third type, however, through manipulating discourse structures and backgrounding the incorporated noun, reduces the salience of the noun within a particular portion of the discourse. Finally, the fourth type of NI, in which a relatively more general noun stem is incorporated to narrow the scope of the verb, is accompanied by a more specific external NP which identifies the argument implied by the incorporated noun. These four types of NI form an implicational hierarchy.

What is common among these types of NI is that the activity or quality designed by the VN construction is semantically a recognizable, unitary concept. The activity is institutionalized, rather than chance co-occurrence of some action or state of some entity. The components lose their individual salience. The incorporated noun no longer refers to any specific entity, but simply modifies the type of activity under discussion. Therefore, it is not marked for definiteness or number, and it loses its syntactic status as an argument of the sentence. If the object is noteworthy in its own right, then, an independent object will have to be used (Mithun 1984).

Using purely syntactic reasoning, rather than Mithun's discourse and functional approach, Rosen (1989) coalesced Mithun's four types of NI into two more general types: Classifier and Compound. According to Rosen, Compound NI affects the argument structure of the simple non-compound form of a verb while Classifier NI does not. In Compound NI, when a noun and verb combine to form a complex verb, the direct object argument of the simple verb is included within the verb complex, so that no direct object can co-occur. In Classifier NI, the direct object argument is not included within the complex verb, so an object NP must co-occur to complete the verb's argument structure. The incorporated noun, however, behaves like a classifier in that it places a selectional restriction on the verb, and the object NP must belong to the class of objects delineated by the incorporated noun root.

Rosen argued that Classifier NI, being able to assign an object theta-role, allows an empty NP node, and also stranding or doubling. Compound NI, on the other hand, being unable to assign an object theta-role, does not allow such processes at all. Based on whether the verb complex is compound or classifier, or whether it allows null pro-forms, Rosen proposed four predictable language types (1989: 316)[1].

3. Chinese VN Compounds. Mandarin permits such compounds as N+N>N, V+V>V, N+V>V, V+N>V, etc. (Lu 1965; Hu 1987). The definition of compound, however, is made difficult by the following facts. (1) A component morpheme may be from Classical Chinese and no longer function as a free morpheme. For example, in *fǒuzé* 'otherwise', *zé*, meaning 'then' in classical Chinese, is not used in Modern spoken Mandarin. (2) The meanings of the component morphemes can be totally unrelated to the meaning of the compound, in other words, idiomaticized. For example, *chīcù*, literally 'eating-vinegar', actually means 'to be jealous'. (3) The meaning of the compound can be indirectly connected with the literal meanings of the component morphemes, as *xīnxū* 'heart-empty = lacking in confidence'. And (4), the meaning of the compound may only be metaphorically related to the meanings of its components, as *hútú* 'paste-smearing = muddleheaded'. Therefore, Chinese linguists traditionally consider as compounds all bisyllabic units that possess properties of single words, but can be analyzed into two or more meaningful elements (Li & Thompson 1981). However, individual cases are very difficult to decide.

Telee Chi (1984) argued that polysyllabic words or idioms cannot

be treated as compounds in a synchronic grammar because they must be learned by native speakers as wholes rather than by combining component morphemes. However, idiomaticity is a matter of degree. In fact, most Chinese VN compounds carry some more or less idiomatic meaning: while *dāng-jiā* 'bear-home = head of the family' (an example from Chi 1984:225) is a perfect VN compound, it is not possible to say *dāng-guó* 'head of the country'. In other words, the VN *dāng-jiā* is fossilized, or, to some degree is an idiom.

Following Mithun (1984) and Rosen (1989), it may be argued that most VN compounds in Mandarin are complex verbs involving NI, because they exhibit certain NI characteristics. Typically, in such compounds, there is a verb stem, plus a noun stem, and the noun behaves semantically as the argument of the verb. The compound, as a whole refers to a unitary concept. This can be illustrated by:

(3) Tā zài chōu-yān.
he DUR draw-smoke
'He is smoking.'

In (3), *chōu* is the V stem and *yān* is the N stem, both can be free morphemes. The N stem *yān* (literally 'smoke') is not referential. The compound is an intransitive verb referring to an institutionalized activity, i.e. 'cigarette/tobacco smoking'. If one wants to specify the object of the action, in other words, to make the object noteworthy, then, the object has to be defined, using determiners, modifiers and/or possessives as in:

(4) Tā zài chōu yì-zhi Měiguó yān.
He DUR draw one-CL American cigarette
'He is smoking an American cigarette.'

In (4), *yān* is a specific entity, with a numeral, a classifier, and an adjective. The NP is the external argument of the verb, rather than a component of a compound.

The problem, then, is whether it is feasible to discuss Chinese V + N compounds in terms of NI, in the sense of Mithun (1984) and Rosen (1989). As pointed out by Telee Chi (1984), a VN compound is inadequate to account for all Chinese structures containing a verb plus a noun. In Chinese VN compounds, the relationship between V and N can be verb-object, and also action-state, verb-inverted subject, loca-

tive etc. The VN compounds referred to in this paper are only those which are called VO compounds by Telee Chi.

Mandarin Chinese is an isolating language in which cases are not overtly marked. This presents a major problem in the analysis of NI. In a case-marking language, (such as Tongan discussed above) the subject of the sentence carries the absolutive case when the noun is incorporated into the verb. However, there is no such marking in Mandarin to tell whether the noun is incorporated or not. A compound verb and a VP can have exactly the same surface structure, as illustrated in 5 and 6:

(5) Tā zài hē tāng.
He DUR drink soup
'He is drinking soup.'

(6) Tā zài yǐn chá.
He DUR drink tea
'He is tea-drinking.'

Sentence (5) is verb-object, at least to some linguists (Li & Thompson 1981:46), while (6) is a sentence involving a V + N compound. The difference is similar to that between the English sentences 'He is mountain-climbing' and 'He is climbing a ladder' (not 'ladder-climbing'). While *hē tāng* usually refers to a specific, non-institutionalized activity, *yǐn chá,* can be a highly institutionalized one, especially to people from Guangdong (Canton) and Hong Kong, where the compound refers to drinking tea and eating dimsum in a restaurant in the morning.

There are several conditions under which a V + N construction is classified as a compound in traditional Chinese grammar, which help to distinguish a VN compound from a verb + object phrase. Any one of these properties is sufficient for a V + N construction to be classified as a compound (Li & Thompson 1981):

A. One or both of the constituents being bound morphemes
B. Idiomaticity of the meaning of the entire unit
C. Inseparability or limited separability of the constituents

When these conditions are compared to Mithun's (1984) criteria for NI, the first condition for the Chinese VN compound does not satisfy one important characteristic of NI. Mithun, in defining NI, pointed out that both the verb and the incorporated noun should be free

morphemes. There should be parallel structures in the language where the noun is not incorporated. However, in Mandarin VN compounds, either or both components can be bound morphemes (Lu 1965; Chi 1984).

The second and the third conditions fall within her criteria for NI. However, when we look closely at the two conditions, we find that there is a close relationship between them. Idiomatic compounds are naturally inseparable. The more idiomatic a compound is, the more inseparable it becomes. When a V+N construction becomes idiomatic, it becomes a compound; as a result, the verb may no longer be able to incorporate other nouns. In other words, the verb stem may become unproductive, and one or both of the component morphemes may become bound. Therefore, it is not difficult to see why bound morphemes play a role in Mandarin VN compounds.

Thus, while Mandarin VN compounds do have the characteristics of NI, the conditions set up in Mandarin for determining compounds do not completely coincide with Mithun's for NI. In other words, not all Mandarin VN compounds can be treated as cases of Mithun's and Rosen's NI. The two sets of criteria intersect: Mandarin allows bound morphemes to be the component(s) of VN compounds, which is not the case with NI; and both idiomaticity and inseparability are the major criteria for Mandarin VN compounds, but idiomaticity is not necessarily a characteristic of NI. Actually if a V+N construction is either idiomatic or inseparable, logically it should be able to exhibit the characteristics of NI. However, the problem is whether we should maintain the criterion of the components as free-morphemes.

The relationship between Mandarin compounds and Compound NI can be schematized as in Chart 1:

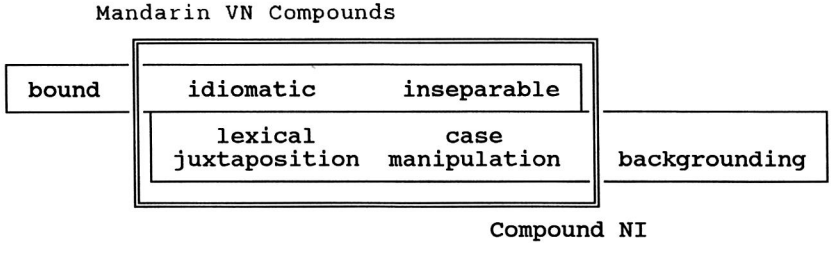

Chart 1

4. Mandarin Noun Incorporation. In this section, I will explore Mandarin VN compounds in terms of NI in further depth.

Mandarin is not a Classifier NI language, as defined by Rosen (1989), so it does not have the VN constructions that can be considered to be Type Four NI by Mithun (1984). Also as shown in Chart 1, Mandarin is not able to manipulate NI to background the object NP and to reduce its salience. In other words, Mandarin does not have the V+N constructions of Mithun's Type Three NI. However, Mandarin does have the First and Second Type NI's, i.e. those of Rosen's Compound NI. Without the help of a case marking system in Mandarin, inseparability becomes the major criterion for deciding if the V+N construction is a VP, or a VN compound involving the incorporation of a noun.

Highly idiomaticized compounds are usually not separable at all. Such compounds involve meaning-change; therefore, if they are separated, the idiomatic meaning may be blurred, as illustrated in the following sentences:

(7a) Wǒ shāng-fēng le. (Li & Thompson 1981)
I hurt wind PER (PER = perfective)
'I caught cold.'

(7b) ?Wǒ shāng-dà- fēng le.
I hurt big wind PER
'I caught a bad cold.'

(7c) *Fēng, shāng le.
wind hurt PER
'(I) caught cold.'

The meaning of shāng-fēng is highly idiomatic, so (7a) is a grammatical sentence. When a modifier dà is inserted as in (7b), the sentence becomes awkward.[2] To say that the cold is serious, usually other modifying constructions are used, as in (7b'):

(7b') Wǒ shāng-fēng shāng de hěn lìhai.
I hurt wind hurt CSC very serious
'I have caught a bad cold.'
(CSC = complex stative construction.)

When the N stem is moved to the topic position as in (7c) above, the sentence is not intelligible. The N in a highly idiomaticized VN

compound cannot be moved to topic position. However, in a verb + object construction, the syntactic direct object of a verb can be placed sentence-initially as a topic, as in:

(8) Xiā, zhuā- dao le.
shrimp catch succeed PAR
'The shrimp, (I) have caught.'

Therefore, in Mandarin Chinese, idiomatic V + N compounds are generally inseparable, especially through movement.

However, idiomaticity is a matter of degree. While there is hardly anything that can be inserted in some highly idiomatic compounds, such as *fā-fú* (develop-happiness = put on weight),[3] most idiomatic V + N compounds can be separated by aspect markers after the verb. In Mandarin, the following are perfectly grammatical:

(9) Tā chī- le- cù.
she eat ASP vinegar
'She was jealous.'

(10) Tā shāng-le- fēng. (c.f. 7a)
he hurt ASP wind
'He caught a cold.'

(11) Tā chuī- guo- niú le.
He blow ASP cow PAR
'He bragged.'

Sentences (9), (10) and (11) are grammatical with the aspect markers le and guo inserted.

Since idiomatic compounds have lost the original meanings of the two components, some may allow limited modifiers for emphasis, but without changing the essential meaning, as in 12 below (compare 11):

(12) Nǐ yòu zài chuī nǐ-de lǎo niú le.
You again DUR blow you-POSS old cow PAR
'You are bragging again.'

In Mandarin, the oblique case can be expressed by a possessive expression, as nǐ-de 'your' in (12), which is, like the aspect marker, also inserted after the verb. The possessive usually introduces an oblique case, but does not involve any sense of possession.

On the other end of the idiomaticity scale, we find that there are few if any constraints on the separability of the two constituents of the V + N compound. Such compounds behave syntactically like a VP composed of a verb and an object where the N constituent of a compound, like the object of a verb in a sentence, can be modified. Compare:

(13a) Tā dǎ- qiú le.
he play ball PER
'He ball-played.'

(13b) Tā dǎ- le- qiú le.
he play PER ball PAR
'He ball-played.'

(13c) Tā dǎ- le lánqiú le.
he play PER basketball PAR
'He basketball-played.'

The compounds in (13a) to (13c) can be considered to be Compound NI's, although in (13b) an aspect marker is used after the V (also found in idiomatic compounds) while in (13c), the N is more specific. All these compounds refer to a unitary, institutionalized activity, i.e. ball-playing, although (13c) refers to a more specific kind of ball. However, when we go on to insert more noun-modifiers, then, the N becomes more specific, or noteworthy:

(13d) Tā dǎ- le yì-chang lánqiú.
he play PER one-CL basketball
'He played a basketball game.'

In (13d), the N, with a measure phrase (a numeral and a classifier) before it, refers to a specific game played. Therefore, this cannot be considered as a case of Compound NI. This is where V + N compounds treated in traditional Chinese linguistics and the concept of Compound NI diverge. The V + N constructions with modifiers cannot be considered as NI's, according to Mithun (1984), because they become noteworthy. They do not refer to an activity in general, but to some specific instances of the activity. This is especially true with less idiomized Mandarin V + N constructions. However, traditional Chinese linguistics still treats such constructions (13d) as compounds, even though

there are modifiers separating the verb and the noun (Li & Thompson 1981).

In addition to (13d), in which a measure phrase is inserted, other modifiers such as a wh-word can also be inserted into a VN compound, according to traditional Chinese linguistics, as in (14):

(14) Tā yòu sù–shénme kǔ?
he again tell what bitterness
'What is he complaining about?'

In traditional Chinese linguistics, the noun stem is even allowed to be topicalized, like its NP counterpart in a VP (Li & Thompson 1981):

(15) Zhèi yí jiào, shuì de zhēn hǎo.
this one sleep sleep CSC really well
'I had a really good sleep.'
(shuì-jiào 'sleep-sleep = sleep')

Obviously, the topicalized noun *jiào* in (15) is noteworthy—this *jiào* 'sleep' is the center of attention and cannot be treated as a case of an incorporated N.

As noted above in (13a–d), there is a semantic difference between the use of modifiers for the noun and their lack. With a measure phrase (as in 13d), and a modifier (as in 14), the noun becomes specific. Compare the following:

(16a) Tā kǎn-le cái.
he cut PER firewood
'He did firewood-cutting.'

(16b) Tā kǎn-le yì-xie cái.
he cut PER one-CL firewood
'He cut some firewood.'

(17a) Tā chàng-gē le.
he sing- song PER
'He sang.'

(17b) Tā chàng le ge gē.
he sing PER CL song
'He sang a song.'

Semantically, (16a) and (17a) refer to actions, which are contrasted with other possible activities the person did. In (16b) and (17b), the N, modified by a measure phrase, becomes more salient, or noteworthy.

The Mandarin V + N compound as a unitary concept can be best illustrated only when it is used as a compound NOUN, and without any modifiers. Compare (18) with (14):

(18) Sù- kǔ shi méi yòng de.
tell bitterness is not use PAR
'It is useless to complain.'

Additional examples:

(19a) Tāmen zài kāi- huì.
they DUR open meeting
'They are having a meeting.'

(19b) Kāi- huì shì yíjian tóu- tòng de shì.
open meeting is one-CL head ache NOM thing
'Having meetings is a thing that causes headache.'

The compound kāi-huì 'open meeting' in (19a) acts as an intransitive verb, but the same VN in (19b) acts as a noun, both referring to the institutionalized activity 'having a meeting'. Let us examine one more example, and compare to (13a):

(20) Dǎ- qiú shì wǒ de ài-kào.
play ball is I POSS hobby
'Playing ball-games is my hobby.'

Mandarin, however, does allow the two components of the V + N compound to be separated by certain adverbials without any effect on the unitary concept of the compound, but the adverbial modifies only the verb. For example, the adverbial *yíhuìr* 'for a while', and a durative yì-nián 'one year', can be inserted in V + N compounds referring to non-punctual activities as in:

(21) Tā liáo-le yíhuìr tiān.
he talk PER a.while sky
'He chated for a while.'

(22) Tā niàn-le yìnián shū.
he read PER a.year book.
'He went to school for a year.'

Another adverbial construction, in which the complex stative construction (CSC) word de is used to express duration of time, can to be inserted in front of the N, as in:

(23a) Tā zài bèi-kè.
he DUR prepare-class
'He is class-preparing.'

(23b) Tā bèi le liǎng-ge xiǎoshí de kè.
he prepare PER two CL hour CSC class
'He prepared class for two hours.'

In (23a), bèi-kè is not separated by anything, but in (23b), the components of the compound are separated by a time expression. Even so, the compound in (23b) refers to the unitary concept 'class-preparing.' The N there does not become noteworthy.

The separability issue can be further explored with the BA construction. In Mandarin, there is a construction in which the co-verb bǎ (co-verbs in Mandarin are actually prepositions) occurs with the object in a pre-verb position. However, only those object nouns referring to specific entities can be so moved.

(24a) Tā lǐ- fǎ le.
he arrange hair PER
'He had a hair-cut.'

(24b) Tā bǎ fǎ lǐ le.
he BA hair arrange PER
'He had his hair cut.'

(25a) Tā qiān-míng le.
he sign name PER
'He signed.'

(25b) Tā bǎ míng qiān le.
he BA name sign PER
'He signed his name.'

Lǐ-fǎ and qiān-míng both are unitary concepts, referring to common, general activities. But because they are in BA constructions, *fǎ* in (24b) refers specifically to the hair of the subject, and *míng* in (25b) refers to the specific name, the name of the subject.

From the above discussion, it is seen that in deciding whether a particular VN compound can be treated as NI one depends heavily on semantics, since syntactic features in Mandarin do not offer any help. This point of view is quite in accord with what Telee Chi (1984) has argued. He contends that a morpheme complex cannot be defined as either a compound or a phrasal construction without considering the context in which it occurs; a pair of morphemes is a compound only when the semantic relationship that holds between the constituent morphemes is also a well defined and acceptable one.

5. Mandarin NV compounds as Noun Incorporation. The above discussion is concerned solely about the VN compounds in Mandarin. Mandarin also has NV compounds that can be considered to involve NI. Mandarin NV compounds are traditionally called subject-predicate compounds. From their name, it should be quite clear that in the NV compounds the noun satisfies the subject theta role assigned by the verb. The compound usually functions as an intransitive verb in the sentence. Many such compounds are idiomatic and many, like VN compounds, involve bound morphemes as in:

(26a) Tā tóu- téng.
he head ache
'He has a headache.'

In (26a), *tóu* is the nominal agent in the verb compound and *téng* is the verb stem. *Tā* is the subject. The components of the NV compound are bound together and refer to a unitary concept. The N stem does not refer to any specific entity. When the N is individuated, a different structure is required:

(26b) Tā de tóu téng.
he POSS head ache
'His head aches.'

Evidence that tóu in (26a) is an incorporated nominal agent is found in the following cases:

(27) Tā chángchang tóu- téng.
he often head ache
'He often has headaches.'

In (27), the NV compound is modified by an adverb *chángchang*. It can also be negated:

(28) Tā bù tóu- téng.
he not head ache.
'He does not have headache.'

Tóu-téng is negated by bù in (28). More importantly, the complex verb can be used in an A-not-A construction to form an alternative question:

(29) Tā tóu- téng bù tóu- téng?
he head ache not head ache
'Does he have headaches or not?'

However, an important characteristic of the NV compounds in Mandarin is that their verb stems are usually stative verbs, which are very close to English adjectives.

Therefore, while idiomaticity still plays an important role in Mandarin NV compounds, separability becomes much less a problem here because there is rarely anything that can be inserted between the N and the V.

6. Type II Noun Incorporation in Mandarin. As pointed out above, Mandarin does have VN compounds which resemble Mithun's second type NI. These VN compounds behave like transitive verbs, taking direct objects:

(30) Wǒmen yào dòng- yuán qún- zhòng.
we should move person crowd crowd
'We should mobilize the masses.'

In (30), the V stem dòng 'move' is followed by an internal Noun stem yuán 'person', and together they mean 'mobilize', where the object theta role is assigned to the external N qún-zhòng 'the masses'. The VN compound is highly idiomaticized and semantically the components of the VN compound are so closely bound to each other that the compound is considered as a single word. The literal meaning of

the N has become vague, and it is not referential at all, as xīn 'heart' in (31), which has no reference to anyone's 'heart':

(31) Tā hěn guān- xīn wǒ.
he very involve. heart I
'He is very concerned about me.'

7. Problems. One problem associated with Mandarin involves the implicational hierarchy proposed by Mithun (1984) for the development of NI. Mithun argues that the four NI types (see above) are distributed among languages according to the implicational hierachy of Type IV > Type III > Type II > Type I, each type representing a stage on the path along which the evolution of NI takes place. The evolutionary process may be arrested at any stage. However, what stage is Mandarin at now? Since Mandarin cannot go to the third stage, because it is an analytic language, Stage II is the highest stage which Mandarin can reach. But, is Mandarin just entering Stage II, leaving traces of Stage I, or, is it going backward from stage II to stage I, leaving residue of transitive NIs? Apparently Mandarin does not allow many Type II NIs, and not many new Type II compounds have appeared. Therefore, it is hard to place Mandarin within Mithun's implicational hierarchy.

8. Conclusion. Mithun's typology does not seem to help us to solve the Mandarin problem of distinguishing VN compounds and V+N phrases. While semantic criteria obviously play an important role here, idiomaticity of VN compounds presents a problem: although the N is not individuated, nor noteworthy, very often it goes to the other extreme by becoming a bound morpheme. Since the more idiomatic VN compounds usually consist of a V and a N which are strongly bound in meaning, some degree of insertion between them is allowed. Therefore, to solve the Chinese case, either Mithun's approach will have to be modified to take into account the idiomaticized compounds, in which either the V or the N, or both, become bound morphemes; or traditional Chinese linguistics will need to take a lesson from NI and consider nouns which are noteworthy to be excluded from compounds. The discourse functions of backgrounding and foreground (Hopper and Thompson 1980) may shed some light on this. When nouns in VN compounds become noteworthy by being modified, they are in the foreground, and are essentially not different from nouns in a verb-

object phrase, and should therefore not, in my view, be analyzed as compounds.

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ENDNOTES

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[1]Rosen's typology, with the distinction between Compound NI and Classifier NI, overcomes an obvious problem found in Mithun's model, namely, the difference between the first three types and the fourth type. The fourth does not match the other three, either syntactically or semantically. However, Rosen also missed something: Mithun's second type in Mithun did allow an optional external object argument, which is vacated by the incorporated noun. (This is not an issue which will be discussed here.)

[2]To some linguists, (7b) is a perfectly grammatical sentence. See Li & Thompson (1981:73) for a different view.

[3]To some people, even fā-fú allows the perfective aspect marker to separate the verb constituent from the noun constituent, rather than follow the compound.

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Semitic evidence on some problems of Indo-European prehistory

Abstract. Correspondences in vocabulary and morphology between early IE and Semitic languages reveal some far-reaching prehistoric contacts, whether or not traceable to a remote common language older than proto-IE and proto-Semitic (or the shadowy proto-Afro-Asiatic). In phonology the Germanic cognates are surprisingly close to the Semitic; for example,

(a) The glottal stop shared by Semitic and Germanic languages, as in Arabic {ʔarḍan}, Hebrew {ʔéreꞇ, ʔɔ́reꞇ} : German [ʔ]*Erde*, Old English [ʔ]*eorðe*, [ʔ]*eorðan* 'earth'.

(b) At least one other laryngeal, evinced in IE by an initial vowel other than *e*-, as in Old High German *owl* 'she-lambs' : Geʕez {ʕəgʷl} 'young animal'.

(c) The voiceless fricative in Old Norse *þiōrr* : Arabic {þawrun} 'bull' (nominative), whereas otherwise Greek is closer especially in the accusative case-form {taûron} : Arabic {þawran}.

(d) The voiced stop in the Greek noun *{drépos} 'something plucked' (attested indirectly in the rare adjective {neodrepeîs} 'newly plucked'} : Hebrew {Tərèp̄ɔ̄ṯ-} 'something mangled'—in the common source the initial consonant was probably glottalic.

1. Introduction. Since the research of Hermann Möller, an Indo-Europeanist with much knowledge of Semitics nearly a hundred years ago,[1] other Indo-Europeanists ought to have appreciated the usefulness of Semitic evidence for many of their difficulties. They have, in fact, made little use of Semitic evidence, and the fault was partly Möller's; for there were plenty of defects in his method, and the solid results of it were small, when measured against the sheer bulk of his writings. Yet he made one enormous contribution, which has not gone unrecognised: the theory of laryngeal consonants in PIE, which he based mostly upon actual consonants in the Semitic languages.[2]

As I claim now to build further upon it and to achieve results superior to his, my method seeks to eschew the assumptions that compromised so much of his work. I talk about *prehistoric* rather than *proto*-IE, and *prehistoric* rather than *proto*-Semitic, whereas the whole inquiry of Möller and my other predecessors was bedeviled by the

presumption that they must recapture whatever the ancestor of all the IE languages had in common with the ancestor of all the Semitic languages. For the sake of that remote goal they disregarded on principle anything that might not go back far enough to qualify as 'proto-IE' or 'proto-Semitic'. I on the other hand investigate everything that shows prehistoric contact, whether or not it can be posited before the third millennium B.C., or the fourth, or whatever. In my considered opinion (Levin 1986), a uniform proto-language—out of which certain recorded languages developed through divergence—is a mere figment of bygone scholarship, unneeded and misleading but still attractive to many researchers.

2. The glottal stop. In Möller's presentation of the laryngeal theory, the Germanic glottal stop is a surprising omission, though pardonable in a pioneering effort. As a Dane who published in German as well as his native tongue, he can scarcely have been unacquainted with the sound [ʔ], which is prominent enough in both Danish and German; but his etymologies never mention it in any Germanic language, even where it would be most relevant to his Semitic parallels. For example, the Arabic word for 'earth'[3] he transcribed *'arḍu*^{n} (I prefer {ʔarḍun}^{a}); but he rather muddied the nature of the initial consonant by calling it "spiritus lenis" (Möller 1911:xviii–xxi,69,72)—a term carried over from classical Greek grammars of the Renaissance for what has recently been demonstrated to be merely a negative sign, showing that an initial vowel in Greek was not preceded by aspiration [h-]. (The usual English gloss for "spiritus lenis" is 'smooth breathing'—which leaves it unclarified.)[4]

In German schools of his time, and before and after, a Greek word such as {éraze}^{b} 'earthward, to the ground'—written with that mark ' above the initial vowel—was indeed liable to be pronounced spontaneously with a glottal stop [ʔérace], the same as in [ʔ]*Erde* and in [ʔ]*erdwärts*. Although Möller neglected to cite this particular Greek cognate, probably his ear did perceive in the Arabic a sound reminding him of that school pronunciation of the Greek mark in many, many Greek words. But he fell short of an explicit contemporary identification of that Arabic sound with the initial (but unwritten) *German* consonant; nor does it seem to have occurred to him that German, more than any other modern IE language, was actually *preserving* a prehistoric IE sound.

While advancing beyond his predecessors, he still conceived of his laryngeal consonants mainly as the prehistoric sources or causes of

certain phenomena in *vowels* that Saussure (1879) had studied: their quality [e], [a], or [o], and their length. Möller did not think of the laryngeal consonants as gradually disappearing in some IE branches while persisting longer in other branches as actual consonants. He did posit that the several largyneals, originally distinct from one another, had merged throughout IE as the "spiritus lenis", at least at the beginning of a word; but he did not face the problem of what became of the "spiritus lenis" after the merger, and in practice he cited the IE etyma without that little mark'.

So the glottal stop in the Germanic languages was neglected by the great laryngealist, and it has remained a stepchild of IE linguistics. I cannot blame Möller for leaving a lot to be straightened out after his preliminary exploration. What matters in the long run is the facts, the ones he pointed out as well as the ones he glossed over.

In this particular etymology we can trace the weakening of the glottal stop within English, although it is as strong as ever in standard High German. Although we now say, not *[ðəʔɹþ] but [ðiʸɹþ], unlike *die* [ʔ]*Erde*, the glottal stop still persists in unusual environments, most noticeably in a phrase such as *diggin' up plenty o' earth*. Old English shows much more evidence, through versification, that there was, as there still is in modern German, a regularly pronounced—though unwritten—consonant; e.g. in *Beowulf* (801–802):

sawle secan þone syscaðan	'to seek the soul, that sin-scathed one,
ænig ofer eorþan irenna cyst	any choice one of the irons on earth [would not touch]'.

For the unwritten consonant [ʔ] before *æ-*, *eo-*, *i-* has the same alliterative effect as the *s-* in the previous line (Levin 1984 and 1971: 339–344).

3. The glottal stop and other laryngeals. One of Möller's most interesting claims, on behalf of the prehistoric IE laryngeal consonants, is that they differed from one another in their effect on the neighboring vowel. This claim can be tested through some etymologies linking IE to Semitic. The glottal stop, as known in the Semitic languages, has the least effect upon a vowel. In the word for 'earth', Möller and subsequent Indo-Europeanists have posited an IE laryngeal that does not deflect the vowel away from the quality [e], to judge from most of the reflexes in the attested languages.

Old English, to be sure, shows a sort of diphthong *eo-*, which has

usually been explained as a special phenomenon within this one language. Yet Hebrew has something reminiscent of this: whereas in most phonetic environments the word is {ʔéɾɛc}[c], with an accented front-vowel similar to the Greek, German, etc., nevertheless if it comes in a pausal position—at the end of a verse or a half-verse—a back-vowel takes over: {ʔɔ́ɾɛc}[d]; and if the definite article is prefixed, the back-vowel is then used invariably: {hɔʔɔ́ɾɛc}[e] (Levin 1988:222, 225).

A few other etymologies serve, tentatively, to strengthen the theory that a different laryngeal in Semitic is correlated with a vowel other than [e] in IE. The clearest of these is a word for a young animal, {ʕəgʷl, ʕəgʷal} in Geʕez, the classic language of the Ethiopian church; the best structural match to this in IE is the Old High German *owl*, attested as a gloss upon the Latin *agnae* 'she-lambs'. Indo-Europeanists have long recognised this OHG word as cognate to the Greek {amnón}[f], Latin *agnum*, Church Slavonic {agnẽ}[g], while noting the variation between *l* and *n*. As to the preceding consonant, although no recorded IE language shows a labio-velar in the word for 'lamb', Indo-Europeanists have postulated a prehistoric labio-velar—without being at all aware of the Semitic evidence that confirms it. I have cited the Greek, Latin, and Slavonic words in the accusative singular masculine for the sake of bringing out the morphological parallel to the Arabic accusative singular masculine {ʕijl|an}[h].

There are at least six other morphological correspondences between Semitic and IE in the declension of this word:[5]
Genitive singular masculine,

Latin *agnī* : Arabic {ʕijlī}[k];[6]

Nominative singular feminine,

Greek {amnɛ̃́}[m] (Doric {amnấ}[n]) : Arabic pausal {ʕijlah},
Hebrew {ʕɛg̃lɔ́ʰ}[o],
also Greek {amnós}[p] : Hebrew {ʕɛg̃lɔ̄|ʲ}[q], Arabic {ʕijlat|ʲ}[r];[7]

Nominative dual masculine

Greek {amnɔ́}[v] : Arabic construct {ʕijlā}[w]

Genitive dual masculine

Greek {amnoîn}[x] : Arabic pausal {ʕijlayn}[y]

Nominative plural masculine
Greek {amnoí}[z], early Latin AGNEI : Hebrew construct {ʕɛg̃(ə)lé}[a']

As the cases developed in prehistoric IE languages, and—to a lesser extent—in prehistoric Semitic, the overlapping or interaction between the two families was extensive.

On the semantic side we must note that apart from Geʕez this word in the rest of the Semitic languages designates not a young animal in general but only a calf. Here Geʕez has preserved not only a phonological archaism—a labio-velar simplified elsewhere in Semitic, as well as in IE—but also a semantic archaism. For the prehistory of both IE and Semitic shows how the words for young animals were especially prone to fluctuate.

On the issue of identifying more than one laryngeal in prehistoric IE, I can state a partial correlation: where the Semitic cognate has the consonant {ʕ}, a front-vowel is less likely in the IE languages. In this word we have found *a-* in Latin, Greek, and Church Slavonic, *o-* in OHG. Somewhat similarly, the word for 'bone' (Möller 1911:192): while it shows the closest structural correspondence between IE and Semitic in

Vedic Sanskrit locative {ast^{h}án}$^{b'}$: Hebrew {ʕéɛem}$^{c'}$
(pausal {ʕɔ́ɛem}$^{d'}$),

it manifests a definite back-vowel in Greek {ostéon}$^{e'}$ (nominative-accusative), Latin *os* (genitive *ossis*). The Hittite {Haštai} has indeed an initial consonant, whose specific sound we can scarcely deduce from the problematic syllabary, borrowed by the Hittites from Akkadian.[8]

On the other hand, the closest IE counterpart to the Semitic word for 'eye' (Levin 1971:343)—Hebrew {ʕáyin}$^{g'}$ (pausal {ʕɔ́yin}$^{h'}$), Geʕez {ʕayn}, etc.—is the Old English *eagan*, *egan* (genitive-dative), with a front-vowel. But a back-diphthong appears in the Old High German *ougen*, *ougin;* and in the Gothic {augin} (dative) the initial digraph probably stands for a back-diphthong [au]—or if not that, then a back-monophthong [ɔ]. In the Semitic languages themselves [ʕ] is not altogether adverse to a front-vowel, as the very word for 'calf' shows. It is more adverse than the glottal stop is—other things being equal; e.g. in the Hebrew imperative singular masculine, {ʕămód̄}$^{i'}$ 'stand' but {ʔĕmór}$^{i'}$ 'say'. A more energetic consonant, articulated in the throat, will naturally open the mouth wider and favor the vowel [a].

4. The Germanic and Arabic fricatives. Another great issue in IE phonology challenges Grimm's 'law' for involving several improbable assumptions about prehistory. In the first place, no language on record is known to have shifted its voiceless non-aspirate stops to fricatives in initial as well as other positions, but Grimm posited that very development in the prehistoric genesis of Germanic; e.g. the fricative in the

number *three* (Old English *þrie*, *þreo*, Gothic {þreis}), deviating from the sound attested in Latin *trēs tria*, Greek {treîs}$^{k'}$, {tría}$^{t'}$, Sanskrit {tráyaḥ}$^{m'}$, {trī}$^{n'}$, etc. (Grimm 1853:283; his first publication on this subject was in 1822).

Writing so early in the development of linguistic science, he deserves no censure for supposing that the most anciently attested languages had kept closer to the prehistoric original than the Germanic languages, which are known only from the Christian era. On purely chronological grounds the change from [t] to [þ] could well have taken place after the separation of Germanic from the rest of IE. But that is outweighed by the mass of evidence, all on one side: fricatives are much rarer than stops in the languages of the world; and accordingly, whenever a language with voiceless fricatives spreads to people who lack them in their native repertory of sounds, they are likely to pronounce voiceless stops instead. This has been observed abundantly in recent times as English has spread all over the earth. We have only to posit that prehistoric IE, with similar fricatives, spread rather widely in parts of Europe and Asia where the substrate languages lacked them, and so these voiceless fricatives got replaced by voiceless stops.

Moreover the Semitic evidence strongly supports this explanation. In regard to this numeral, the argument is complicated by some other factors;[9] but it is absolutely clear-cut in the noun that means 'bull' (Grimm 1853:283, Möller 1911:255–256): Old Norse *þiōrr* (nominative) with the fricative, as against Latin *taurus*, Greek {taûros}$^{a''}$, Gaulish TARVOS, Lithuanian *taũras*, besides Finnish and Estonian *tarvas* north of IE territory. The most relevant Semitic representatives are Arabic {þawrun}$^{b''}$ (accusative {þawran}) and Aramaic {to^{w}r}$^{c''}$. Arabic has fricative phonemes in opposition to stops; but Aramaic, one of the Semitic languages that have a smaller repertory of consonants, replaces the fricative with the stop most similar to it. In certain non-initial positions Aramaic has an allophonic fricative pronunciation. The meager corpus of Biblical Aramaic happens to record this word only in the plural: {to^{w}rí^{y}n}$^{d''}$ (Ezra 6:17, etc.); but a prefix makes that initial consonant post-vocalic and accordingly fricative, almost the same as in Arabic: {wəʕiśbɔ́ʔ kəto^{w}rí^{y}n ye^{ʔ}kúl}$^{e''}$ 'and like bulls he would eat grass' (Daniel 4:30)

In Hebrew the reflex of this fricative has merged with a sibilant, yielding {šo^{w}r}$^{f''}$; and a similar merger occurred in Akkadian, although the sounds of this long-extinct language cannot be definitely recovered. Geʕez has {sor}. Ugaritic in northwestern Syria evidently maintained the distinction much as we find it in Arabic; the Ugaritic

word can be transcribed {þr} (vowels not indicated). The Semitists have uniformly credited Arabic with conserving an original fricative sound.

In spite of the distance between Semitic and Germanic territory, the only plausible reconstruction of prehistory is that the fricative pronunciation attested in Arabic and in Norse goes back the furthest. It would not have arisen independently in two widely separate areas, even if we could envisage the glottal stop in the Semitic {ʔarḍun} or {ʔέrɛc} and in the German [ʔ]*Erde* arising independently. On the other hand, the stop *t-* could well have developed secondarily among people whose substrate languages were averse to the fricative.

Apart from this initial consonant, the Greek or Latin word for 'bull', as well as the Lithuanian or the Church Slavonic, resembles the Arabic more closely than the Norse does. Especially the Latin genitive singular, in combination with the word for 'horn' in the nominative singular, affords a most striking correspondence, *cornū taurī*: {qarnu þawrī}$^{g''}$ 'a bull's horn' (the Arabic ending {-ī} only in poetry at the end of a verse).

5. Voicing or glottalization? A second part of the recent attack upon Grimm's 'law' maintains that the Germanic voiceless aspirate stops, as in the number *two* (*twa* in Old English), could hardly have arisen from the voiced stops attested in Sanskrit, Greek, Latin, etc. (Grimm 1853: 282–283). The strongest arguments are the negative ones: that nothing, or next to nothing, in the common IE vocabulary goes back to a voiced labial stop **b;* and that no IE biconsonantal roots consist of two voiced stops—**d-g-*, **d-g^{w}-*, etc. It has been fairly inferred that in prehistoric IE some feature of articulation, different from mere voicing, inhibited or severely restricted the occurrence of a certain type of consonant. Gamkrelidze and Ivanov (1984:9 ff.) and Hopper (1973) have reasoned that the IE forerunners were voiceless glottalized stops, which I would symbolize as follows: **t^{ʔ}*, **k^{ʔ}*, **k^{ʔw}*.

The most relevant IE-Semitic etymology is the word for 'twin'. Now the Greek {dídymos}$^{h''}$ is obviously IE in its structure but, paradoxically, has no recognised IE cognates.

(a) The base {-dy-} is the pan-IE 'two';

(b) {di-} is a normal IE reduplicating prefix, quite appropriate semantically, and consists of the same consonant + {i};

(c) {-mo-} at the end of certain numerals makes them ordinal, in particular the climactic ones (in Latin *prīmus, septimus, decimus*, as

well as superlatives; in Greek {hébdomos}$^{i''}$ 'seventh', {prómos}$^{j''}$ 'leader').

Didymos was often used by Greeks as a given name; we may gloss it 'Second' or 'Secondest' in a special context, when the parents had a name ready for a new-born boy, typically that of his deceased grandfather, but were surprised to get another son on top of that one.

The word for 'twins' in the Semitic languages has an anomalous, variable structure. Nearly the closest in sound to the Greek {dídym|oi}$^{k''}$ (nominative plural) is the Hebrew {tə^{ʔ}o^{w}m|é^{y} cə$\bar{\text{b}}$iyy$\check{\text{ɔ}}^{\bar{\text{h}}}$}$^{l''}$ 'a gazelle's twins' (Cant. 4:5); when the verse is repeated later in the book, these words are {tɔ$^{ʔ}\check{\text{ɔ}}$m|é^{y} cə$\bar{\text{b}}$iyy$\check{\text{ɔ}}^{\bar{\text{h}}}$}$^{m''}$ (7:4). The inconstancy recurs in the Aramaic translation, {tə^{ʔ}o^{w}m|e^{y}}$^{n''}$ in 4:5, but {tə^{ʔ}u^{w}m|e^{y}}$^{o''}$ in 7:4, with a vowel most like the Greek {-y-}$^{p''}$ ([ü] in Attic, [u] in most other dialects). The Arabic accusative singular is {taw^{ʔ}am|an}$^{q''}$ with a case ending that corresponds to the Greek δίδυμ|ον {dídym|on}$^{r''}$ but the second and third consonant are in the opposite order from Hebrew and Aramaic.

The explanation that occurs to me is as follows: A word of IE origin for 'twin' spread through much of the Semitic territory (though not to the southern reaches); most likely it was disseminated by families that intermarried. A prehistoric voiceless glottalized consonant *$t^{ʔ}$-$t^{ʔ}$-, repeated in two successive syllables, is reflected in Greek by {d-d-}; but in the Semitic languages the complex consonant has been resolved into its components, the voiceless dental stop {t-} in the initial position and the glottal stop {-^{ʔ}-} in the recurrence. For Hebrew I have found much evidence that the voiceless stops, apart from certain environments, were usually aspirate in ancient times (Levin 1971:572 ff.)—just as they are in Germanic. In Arabic, on the contrary, the {t} is not aspirate.

Several other etymologies, without a reduplicated consonant, also support the interpretation that the voiced stops of the ancient IE languages go back to voiceless glottalized stops. One of them is an indisputable loan-word in Greek from a Semitic source, a weight called {sígl|os}$^{s''}$ (nominative plural {sígl|oi}$^{t''}$) in classical Attic texts around 400 B.C., but {síkl|os}$^{u''}$ (nom. pl. {síkl|oi}$^{v''}$) in the Greek translation of the Hebrew Scriptures a century or two later. Here is manifestly a Greek adaptation of something very close to the attested Hebrew singular {šéqɛl}$^{w''}$ and construct plural {šiq(ə)l|é^{y}}$^{x''}$. The articulation of the second consonant, often labeled "emphatic", is somewhat problematical in Semitic grammar: In Arabic it is velar; in Geʕez and the modern languages of Ethiopia it is glottalized; for the more

anciently attested Semitic languages, including Hebrew, we lack clear phonetic evidence, but glottalization is the favored theory.

The choice of the Greek letter γ {g}, and later of κ {k}, points to a trend in the Greek language: When the word was first introduced, a feature of the Semitic consonant reminded a Greek ear of one Greek sound rather than the other; and that feature may well have been glottalization, still lingering in the Greek consonant γ {g} (perhaps also in δ {d}). 400 B.C. should be taken as the *terminus ante quem* for the borrowing—it may well have happened much earlier—and 300–200 B.C. as the *terminus ante quem* for the loss of glottalization, at least in the Greek of the Bible translators.

Another etymology that shows a Semitic 'emphatic' consonant corresponding to a Greek and Slavic voiced stop is the verbal root

{T-r-P} : *dr-p-* 'tear, mangle, pluck'.

The most exact match, morphologically, is between the Hebrew stative noun {Tərèp̄ō|ṓ^{w}}$^{y''}$ 'his mangled beast' ({Tərep̄ō^{h}}$^{z''}$ 'a mangled beast'—i.e. 'something mangled'; Levin 1977:317–319,327) and the Greek noun *{drépos}^{aa} 'something plucked or ripped'.[10] Besides {drep-} as in the imperative verb {apó|drepe}^{dd} 'tear off', Greek has other vocalizations of this root:

{drýpten}^{ee} 'she tore, she mangled',
{dryp^{h}oí}^{ff} 'scrapings' : Hebrew {Təru^{w}p̄é^{y}}^{gg} 'scratched, torn'[11]
{dr$\acute{\text{ɔ}}$ptein}^{ii} 'to cut through'[12]

Here the Greek consonant {d} is not reduplicated as in {dídymoi} 'twins'; so in the Semitic counterpart the glottalic feature of the initial consonant [t^{ʔ}-] is not disguised through dissimilation, as we saw it disguised in {tə^{ʔ}u^{w}me^{y}}.

Sanskrit adds evidence of a different sort that the voiced stops were descended from voiceless glottalized stops. A final voiceless stop, as in {āsīt}^{kk} 'was', becomes voiced when followed by a word beginning with a vowel. This is not mere assimilation to the inherent voicing of vowels; for within a word a voiceless consonant between vowels maintains its voiceless quality. Thus

{tiraščī́nō vítatō rašmír ēṣām
ad^{h}áḥ svid āsī́^{3}d upári svid āsī^{3}t}

'Their cord is stretched horizontal. *Was* it below? *Was* it above?' (RV. 10.129.5). It is fair to infer that something consonantal at the begin-

ning of {upári}, or rather of its prehistoric forerunner, combined with the consonant at the end of the verb to produce {d} instead of {t}—whereas nothing of the sort took place in the interior of {vítatō}.

Now we have an IE-Semitic etymology for {upári}, most simply illustrated by Old English *ofer:* Hebrew {ʕébɛr}[mm] (Levin 1971:556). In both languages the word serves either as a preposition or as a noun 'shore' or 'bank' (which survives in a few modern English place-names such as *Westover*). Old English verse reveals, here again, an unwritten initial consonant in

[ʔ]*ofer* [ʔ]*eastreamas* [ʔ]*is brycgade*

'over (water-)streams ice made a bridge' (*The Legend of St. Andrew* 2523–24). The double function, as noun and as preposition, leads us back into the genesis of these grammatical types, shared between IE and Semitic; that, however, would call for a lengthy inquiry.

The third person singular ending of the verb {āsī|t}—the consonant {-t}—is the shorter alternant of the syllable {-ti}, as in the present {ás|ti}[nn] 'is', {vártati}[oo] 'he/she/it turns'. The Gothic cognate of the latter is {wairþiþ} 'he/she/it shall be', with the expected fricative. Given this verb-root, the shorter ending occurs in Sanskrit when compounded with a prefix: {nivártat}[pp] 'it rolled down'. Now both of those alternants, {-t} and {-ti}, turn up clearly in one Semitic language, classical Arabic, as the third person singular *feminine* ending: {waradat}[qq] 'she came down', but {waradati}[rr] under certain conditions—especially if the next word begins with the definite article. The phonetic side of the match is considerably tighter than the semantic side; for that matter, the meaning of this verb-root ranges quite a bit from one IE language to another, and from one Semitic language to another.

For my immediate purpose it matters that verb-endings constitute a somewhat peculiar stratum in IE-Semitic correspondences—ultimately explicable through relative chronology, depending on when in IE and Semitic prehistory these inflections developed. Among other things, the Sanskrit voiceless stop {t} in a verb-ending corresponds to an identical voiceless stop in Arabic, not to a voiceless fricative (as in Gothic and other early Germanic languages). However, if the next word begins with a vowel, then the Sanskrit {t} is replaced by the voiced {d}:

{yád dha prasárgē trikakúm nivártad[13]
ápa drúhō mā̆nuṣasya dúrō vaḥ}[ss]

'As the three-pronged [lightning] rolled down in an outpouring, it opened the gates, the enemies of man' (i.e. it released the rain-water, RV.1.121.4).

The likeliest explanation of {d} instead of {t} is that the voiced dental stop goes back prehistorically to a voiceless glottalized dental stop *[t'], of which the glottalic component came from the beginning of the next word. Thus it reflects an initial consonant—a glottal stop, if nothing more—before the vowel of the first syllable of {ápa}. This IE word (Greek {ápo}[tt], etc.; Pokorny 1959:53–54)—unlike {upári}—has no plausible Semitic cognate; but the Sanskrit *sandhi* is indirect evidence of a prehistoric IE phonology that allowed no words (or hardly any) to begin with a vowel. On that point the Germanic languages—and High German above all—seem to be the most conservative, along with nearly all the Semitic languages. Here we may even be catching the echo of an archaic way to operate the vocal organs—one that the human race formerly did on a much larger scale, in many parts of the world, but has since laid aside.

6. Concluding remarks. In this paper I have concentrated upon phonological problems; but any such inquiry, when it cites the Semitic evidence bearing upon IE, is bound to get into morphology also. For example, I can hardly leave the Old English noun and preposition *ofer*, its Sanskrit cognate {upári} (preposition or adverb), its Hebrew cognate {ʕēber} (noun and preposition), etc., without taking up the structure of the word as analyzed in IE terms, and analyzed differently in Semitic terms. {upári} and the Greek {hypèr}[uu] (also {hypeìr}[vv] in poetry) appear to be formed from a briefer IE preposition, {úpa}[ww] 'toward' in Sanskrit, {hypò}[xx] 'under' in Greek ({hýpo}[yy] when it follows the noun). But then the suffix (see Pokorny 1959:1105–1106), which would include the consonant *r* or consist essentially of that consonant, remains elusive, for lack of any clear morphological parallel. Perhaps that, in itself, is due to a formation far, far back in the prehistoric past. The meaning of the two prepositions makes it hard to grasp how {hypèr} could have been formed from {hypò} as its opposite.

In the Semitic languages the consonants of the noun and preposition {ʕēber} function also as a verbal root, 'cross, go across or beyond'; e.g. the imperative {ʕābór}[zz] (mas. sing.). Nothing within Semitic philology can really determine whether the verbal function is older than the non-verbal, neither for this triconsonantal root nor for roots in general—although a tradition among the grammarians, amounting almost to a prejudice, likes to treat verbs as more funda-

mental. Since no cognates of this root have been found in Afro-Asiatic (Egyptian, Berber, Cushitic, Chadic), a fair hypothesis would be that the preposition and noun—amenable, as a noun, to case endings—entered prehistoric Semitic from prehistoric IE and was subsequently adapted to the verb system. This, however, would entail a corollary that the initial IE consonant, to a Semitic ear, resembled the distinctly pharyngeal {ʕ} rather than the mere glottal stop {ʔ}.

Anyhow, the etymological facts lead to the inference that the {ʕ-}, which was preserved in Semitic, suffered weakening or eventual disappearance in the course of IE prehistory and history. The question to be further pursued is whether there is definite evidence, in early prehistoric IE, of a consonant much like the Semitic {ʕ}. To throw light on that, and on other problems involving the two language groups, we must investigate more etymologies of high quality, embracing not just a consonantal skeleton called the root but the vowels and even the accents (insofar as such information is recorded). I myself am in the midst of writing the etymological half of a lengthy book on Semitic and Indo-European comparative grammar; the other half will systematically analyze the phonology, morphology, and syntax.

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ENDNOTES

[1]Aside from his great *Wörterbuch* (Möller 1911), his most important book was *Semitisch und Indogermanisch, Teil 1: Konsonanten* (Copenhagen: H. Hagerup, 1906; repr. Hildesheim: Georg Olms, 1978).

[2]On Möller's indispensable role in shaping this theory, see Szemerényi 1973:5–14.

[3]Words in Arabic and other languages that are not written in the Latin alphabet are transliterated by me inside braces { }, followed by a raised minuscule letter. The actual words, in each native script, are listed in an appendix at the end of the article (to the extent that my software avails).

[4]For my purpose it is not essential to review here the evidence that the ancient Greek scholars who introduced the little mark meant it for a negative sign (no consonant), rather than for a glottal stop. But to avoid the confusion that has developed, I urge linguists, when citing Greek, to use the proper ancient shape ˧ (rather than the now familiar simplification '), and the mirror image ˩ (rather than ') for the 'spiritus asper' or 'rough breathing', which in ancient manuscripts certainly stood for the consonant [h].

Many modern transcribers of Semitic and other non-IE languages use ' for the glottal stop, and—what is worse—‘ not for [h] but a different guttural sound, a voiced pharyngeal. To remedy this abuse, the phonetic characters ʔ and ʕ have been created by deliberate alteration of ' and ‘.

[5]These are almost exactly parallel to the case forms of the IE-Semitic word for 'bull'—Greek {taûron}^{i}, Lithuanian *taũrą*, Latin *taurum*: Arabic {þawran}^{j}—where the cognate base is not at all disguised by divergent phonetic and semantic developments; see Levin 1990:155.

[6]Only at the end of a line of poetry; otherwise {ʕijlin}^{l}.

[7]{amnós} in Greek can refer to a definitely female lamb, as well as to a male; {amnḗ} or {amnā́}, on the contrary, is exclusively feminine. The Hebrew {ʕɛglɔ̄tī^{y}}, Arabic {ʕijlati^{y}}, with the possessive suffix, means 'my she-calf'. Hebrew nouns lack the case endings characteristic of Arabic and the ancient IE languages; and this suffix, in Arabic too, entails a neutralization of the cases. The cases are also neutralized in the Arabic pausal form {ʕijlah} 'a she-calf'. The non-pausal forms are *written* as well with the letter {-h} but pronounced with the consonant [t] plus case endings: nominative [ʕijlatun]^{s}, genitive [ʕijlatin]^{t}, accusative [ʕijlatan]^{u}.

[8]The 'emphatic' middle consonant in the Semitic forms—GeʕEz {ʕaḍm}, Arabic {ʕaẓmun}$^{f'}$ (nominative), etc., including the Hebrew {ʕɛ́/ɔ́cɛm}—is best explained as a compression of the two-consonant group preserved or reflected in Sanskrit {-st^{h}-}, since prehistoric Semitic favored a triconsonantal root for the great bulk of its nouns, as well as its verbs. Sandwiched in between {ʕ} and {m}, a two-consonant group was vulnerable to some sort of reduction.

[9]The most exact Semitic cognate is Aramaic {tərḗ^{y}}$^{o'}$, which—however—means 'two' (Ugaritic {þn} with no vowels recorded, Arabic {(ʔi)þnāni}$^{p'}$, Hebrew {šənḗ^{y}}$^{q'}$, etc.). The same discrepancy in meaning recurs plainly between Sanskrit {dáša}$^{r'}$, Greek {déka}$^{s'}$, Gothic {taihun} 'ten' and Hebrew/Aramaic {təšáʕ}$^{t'}$ (Hebrew also {téšaʕ}$^{u'}$), Arabic {tisʕun}$^{v'}$ (nominative), Ugaritic {tšʕ} 'nine', and is detectable—although obscured by complex phonetic divergences—in 'five/four' and 'nine/eight'. Most likely it arose in remote prehistory, when the numerals arose from pet names for the fingers—{trṓ/tərḗ^{y}} being the middle finger of one hand (presumably the right), {dáša/téšaʕ} the little finger of the other hand (Levin 1971:736–737). The proto-Semitic way of counting could have used the right thumb merely as the counter but begun the count with the forefinger, whereas the proto-IE way began the count with the thumb itself, taking the middle finger third.

A vestige within IE of the Semitic meaning 'two', rather than 'three', is the suffix exemplified by the Latin interrogative *u|ter* 'who (of two)', Greek {pó|teros}$^{w'}$, Sanskrit {ka|taráḥ}$^{x'}$, Gothic {h^{w}a|þar} (cf. English *whe|ther*); also paired words such as the Latin feminine adjectives *dex|tra* 'the right [hand]', *sinis|tra* 'the left', and comparative—as opposed to superlative—adjectives: Greek {p^{h}ī́l|teros}$^{y'}$ 'dearer' (Sanskrit {priyá|taraḥ}$^{z'}$, etc.

[10]This unattested neuter noun is evinced by two rare compound adjectives derived from it: {neodrepeîs}^{bb} 'newly ripped/plucked' (nominative-accusative plural; by elephants in Aelian, *De natura animalium* 4.10; by human beings in Aretaeus, *Corpus medicorum Graecorum* 2.94.22 Hude) and {artidrepɔ̂n}^{cc} 'just picked' (genitive pl., referring to dates; Heliodorus 2.23).

[11]Masculine plural construct of the passive participle. Only the feminine singular {ʀəru^{w}p̄ɔ́^{ĥ}}^{hh} of this participle is actually reported, and only in post-Biblical Hebrew at that. The Semitic—and especially Hebrew—distinction between passive and stative is intertwined with some obscure morphological developments in prehistoric IE.

[12]Known only from the ancient Greek lexicographer Hesychius, who found it in a play of Aeschylus that has not survived. He gives two apparently incompatible and presumably speculative glosses: 'to cut through, or to look through'; only the former meaning would be related to that of {drep-}. The Russian dialect word {drápat^{j}}^{ii} 'to scratch, to tear' is like the Greek {drɔ̄p-} insofar as the {a} regularly reflects a *long* vowel of prehistoric IE (Pokorny 1959:21, Vasmer 1953:367).

[13]For this rule of *sandhi* (phonetic adjustment) between words, it does not matter that the meter shows a split in the verse right after {nivártad}—precisely eleven syllables up to that point, and eleven after it.

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Citations from Languages Not Written in the Latin Alphabet

a. Arabic أَرْض (ʔarḍun) b. Greek ἔραζε (éraze)

c. Hebrew אֶרֶץ (ʔérɛc) d. אֶרֶץ (ʔɔ̃rɛc) e. הָאָרֶץ (hɔʔɔ́rɛc)

f. Greek ἀμνόν (amnón) g. Church Slavonic агнѣ (agnē)

h. Arabic عِجْلاً (ʕijlan) i. Greek ταῦρον (taûron)

j. Arabic ثَوْراً (θawran) k. عِجْلِ (ʕijlī) l. عِجْلٍ (ʕijlin)

m. Greek ἀμνή (amnḗ) n. Doric Greek ἀμνᾶ (amnā́)

o. Hebrew עֶגְלָה (ʕɛglɔ́ʰ) p. Greek ἀμνός (amnós)

q. Hebrew עֶגְלָתִי (ʕɛglɔtī́ʸ) r. Arabic عِجْلَتِي (ʕijlatiʸ)

s. عِجْلَةٌ (ʕijlatun) t. عِجْلَةِ (ʕijlatin) u. عِجْلَةً (ʕijlatan)

v. Greek ἀμνώ (amnɔ̄́) w. Arabic عِجْلاَ (ʕijlā)

x. Greek ἀμνοῖν (amnoîn) y. Arabic عِجْلَيْنِ (ʕijlayn)

z. Greek ἀμνοί (amnoí)

a'. Hebrew עֶגְלֵי (ʕɛg(ə)léʸ) b'. Sanskrit अ स्थ न् (astʰán)

c'. Hebrew עֶצֶם (ʕécem) d'. עֶצֶם (ʕɔ̃cem)

e'. Greek ὀστέον (ostéon) f'. Arabic عَظْم (ʕaẓmun)

g'. Hebrew עַיִן (ʕáyin) h'. עֵין (ʕɔ̃yin) i'. עָמֹד (ʕāmód̄)

j'. אֱמֹר (ʔĕmór) k'. Greek τρεῖς (treîs) l'. τρία (tría)

m'. Sanskrit त्रयः (tráyaḥ) n'. त्री (trī́) o'. Aramaic תְּרֵי (təréʸ)

p'. Arabic اثْنَانِ ((ʔi)θnāni) q'. Hebrew שְׁנֵי (šənéʸ)

r'. Sanskrit दश (dáša) s'. Greek δέκα (**déka**)

t'. Hebrew/Aramaic תְּשַׁע (təšáʕ) u'. Hebrew תֵּשַׁע (téšaʕ)

v'. Arabic تِسْع (tisʕun) w'. Greek πότερος (**póteros**)

x'. Sanskrit कतरः (**kataráḥ**) y'. Greek φίλτερος (**pʰílteros**)

z'. Sanskrit प्रियतरः (priyátaraḥ)

a". Greek ταῦρος (**taûros**) b". Arabic ثَوْر (**pawrun**)

c". Aramaic תּוֹר (**toʷr**) d". תּוֹרִין (**toʷríʸn**)

e". וְעִשְׂבָּא כְּתוֹרִין יֵאכֻל (**wəʕiśbóʾ kəṯoʷríʸn yeʾkúl**)

f". Hebrew שׁוֹר (**šoʷr**) g". Arabic قَرْنُ ثَوْرٍ (**qarnu pawrī**)

h". Greek δίδυμος (**dídymos**) i". ἕβδομος (**hébdomos**)

j". πρόμος (**prómos**) k". δίδυμοι (**dídymoi**)

l". Hebrew תְּאוֹמֵי צְבִיָּה (**təʾoʷméʸ cəbiyyóʰ**)

m". תָּאֳמֵי צְבִיָּה (**tɔʾŏméʸ cəbiyyóʰ**)

n". Aramaic תְּאוֹמֵי (**təʾoʷmeʸ**) o". תְּאוֹמֵי (**təʾuʷmeʸ**)

p". Greek -υ- (**-y-**) q". Arabic تَوْأَمًا (**tawʾaman**)

r". Greek δίδυμον (**dídymon**) s". σίγλος (**síglos**)

t". σίγλ|οι (**sígl|oi**)) u". σίκλος (**síklos**) v" σίκλοι (**síkloi**)

w". Hebrew שֶׁקֶל (**šéqɛl**) x". שִׁקְלֵי (**šiq(ə)léʸ**)

y". טְרֵפָּתוֹ (**trɛrèpɔṯóʷ**) z". טְרֵפָּה (**trɛrepɔ́ʰ**)

aa. Greek *δρέπος (**drépos**) bb. νεοδρεπεῖς (**neodrepeîs**)

cc. ἀρτιδρεπῶν (**artidrepɔ̂n**) dd. ἀπόδρεπε (**apódrepe**)

ee. δρύπτεν (**drýpten**) ff. δρυφοί (**dryp^hoí**)

gg. Hebrew פָּרוֹפֵי (tərᵘwpéʸ) hh. פרופה (tərᵘwpɔ́ʰ)

ii. Greek δρώπτειν (drɔ́ptein)

jj. Russian dialects **дра́пать** (drápatʲ)

kk. Sanskrit आ सी त् (āsīt)

ll. ति र् श्री नो वि तं तो र् श्मि रें षा म् धः स्वं दा सी३दु प रिं स्वि दा सी३त् (tiraščínō vítatō rašmír ēṣam adʰáḥ svid āsí³d upári svid āsī³t)

mm. Hebrew עֵבֶר (ʕébɛr) nn. Sanskrit अ स्ति (ásti)

oo. व र्ं ति (vártati) pp. नि व र्ं त (nivártat)

qq. Arabic وردت (waradat) rr. وردت (waradati)

ss. Sanskrit य द्ध प्र स गैं त्रि कु कु म्नि व र्ं द प् द्धु हो मा नु ष स्य दु रो वः (yád dha prasárgē trikakúm nivártad ápa drúhō mā́nuṣasya dúrō vaḥ)

tt. Greek ἀπο (ápo) uu. ὑπὲρ (hypèr) vv. ὑπεὶρ (hypeìr)

ww. Sanskrit उ प (úpa) xx. Greek ὑπὸ (hypò)

yy. ὑπο (hýpo) zz. Hebrew עֲבֹר (ʕăbór)

aa'. **Индоевропейский язык и индоевропейцы** (indoevropejskij jazyk i indoevropejcy)

JOHN R. COSTELLO

Proto-Indo-European *-neu-/-nu-*: Evidence of an erstwhile auxiliary?

Abstract. It is argued that (a) PIE *neu-* 'go, etc.' acquired metaphorical meanings like 'do X', as did other PIE verbs meaning 'go' (e.g. **ei-*); (b) in late PIE, *neu-* became encliticized when following objects, and was reanalyzed as a 'meaningless' auxiliary, finally becoming a meaningless suffix, in certain lexical environments; and (c) PIE *neu-* survived as an independent verb in Sanskrit and Greek, and as a meaningless suffix in Indic (as *-no-/-nu-*), Iranian, Hellenic, Armenian, Germanic, and (in part) Hittite. Evidence for this analysis is drawn from Indic, Hellenic, and Hittite. These claims conflict with a widely accepted analysis of Saussure's (1879), who maintained that the Sanskrit Class 5 formant *-no-/-nu-* and its cognates in other languages was an infix *-ne-/-n-* in roots with final *-u* (and that Class 5 could thus be viewed as parallel to two other infixed classes in Sanskrit, 7 and 9, the latter with a laryngeal). Evidence against Saussure's analysis of Class 5 is drawn from Indic and Iranian.

1. Introduction. In this paper I argue that the ablauting formant *-no-*[1] which characterizes Sanskrit verbs assigned to Class 5 by the native Sanskrit grammarians, and the cognates of this formant in the Iranian, Hellenic, Anatolian, Germanic, and Armenian branches of the Indo-European family, originated in a postposed auxiliary that developed from a verb **neu-* 'go' in an early stage of Proto-Indo-European (PIE). I argue further that in certain environments, PIE *neu-* was encliticized, and eventually came to be reanalyzed as a suffix, which is its status in the earliest attested daughter languages of PIE. I shall refer to the preceding as the Auxiliary Hypothesis. This view contrasts strongly with claims expressed in earlier literature, which maintain that the ancestor of Sanskrit *-no-*, as well as its cognates in other branches of the Indo-European (IE) family, is to be analyzed as an ablauting infixed element *-ne-* plus a root final *-u*; cf. for example Saussure 1879, Hirt 1928, Lehmann 1952, Mayrhofer 1965; Polomé 1965, and Kerns and Schwartz 1972. I shall refer to this as the Infix Hypothesis. In the following, I shall first discuss the Infix Hypothesis, and shall present evidence which indicates that this hypothesis is untenable (§2). Next, I shall present data and arguments which support the Auxiliary

Hypothesis (§3). Then, using the comparative method, I shall present a reconstruction of the posited auxiliary, and shall recapitulate its development into a suffix. I shall also discuss the special development of this auxiliary in Anatolian (§4).

2. The Infix Hypothesis.

2.1. Preliminaries: Data and Distribution. As was stated above, the ablauting formant *-no-* which characterizes Sanskrit verbs assigned to Class 5 by the native grammarians has cognates in several branches of the IE family outside of Indic, including Hellenic (*-nŭ̄-*), Anatolian (*-nu-*), Germanic (*-nn-*), Iranian (*-nāv-*), and Armenian (*-nu-*):

(1) (a) PIE *er-*, *or-*, *r-* 'to set oneself going' (cf. Pokorny 1959:326ff.)

Skt. *ṛ̥-ṇó-mi* 'I move'
Gk. *ór-nū-mi* 'I move'
Hitt. *ar-nu-* 'move'
Goth. *rinn-an* (from **re-nu-*) 'run, walk'[2]

(1) (b) PIE 2 *ar-*, *er-* 'apportion; (middle) to acquire' (cf. Pokorny (1959:61)

Gk. *ár-nu-mai* 'receive, obtain'
Av. *ərə-nāv-i* 'was allotted'
Arm. *aṙ-nu-m* 'I take'[3]

2. 2. Saussure's Analysis. As early as the 1870's, Saussure (1879: 239) maintained that the PIE formant *-neu-*, along with its reflexes in the daughter languages, was to be analyzed as an infixed ablauting element *-ne-* followed by a root final *-u*. This analysis has been accepted by many Sanskritists such as Mayrhofer (1965:79f.), and by Indo-Europeanists such as Hirt (1928:198ff.), Lehmann (1952:24), and Kerns and Schwartz (1972:7) (cf. also Polomé 1965, passim). The grounds for this analysis may be seen in the stems of the present tense and the passive perfect participle of the Sanskrit root $\sqrt{\text{çru}}$ 'hear', one of some fifty verbs belonging to Class 5 of the native Sanskrit grammarians.[4]

If one compares the stems of $\sqrt{\text{çru-}}$

(2) $\sqrt{\text{çru-}}$ 'hear' (Class 5)

pres. sg. 1	*çr̥̄-ṇo-mi*	< **çr̥̄-ṇa-u-mi*	(*o*<**au*<**eu*)
pres. pl. 1	*çr̥̄-ṇu-mas*	< **çr̥̄-ṇ-u-mas*	
perf. pass. part.	*çrŭ̄-ta-*	<**çrŭ̄-ta-*	

with the stems of the present tense and the perfect passive participle of verbs in Class 7

(3) $\sqrt{yuj}$- 'harness, join' (Class 7)

pres. sg. 1	*yu-na-j-mi*	($j < *g$; $a < *e$)
pres. pl. 1	*yu-ñ-j-mas*	
perf. pass. part.	*yuk-ta-*	

and verbs in Class 9

(4) $\sqrt{pū}$- 'purify' (Class 9)

pres. sg. 1	*pu-nā-mi* <	**pu-na-ə-mi* ($ā < *aə < *eə$)
pres. pl. 1	*pu-nī-mas* <	**pu-n-ə-mas* ($ī < *i < *ə$)
perf. pass. part.	*pū-ta-* < **puə-ta-* ($ū < *uə$)	

it becomes possible to analyze the present stems of Classes 5 and 9 as being parallel to the present stem in Class 7, i.e. as the perfect stem with an ablauting formant *-ne-* prehistorically infixed immediately before the final consonant or vowel of the perfect stem; attested forms reflect subsequent sound changes. Although a discussion of Classes 7 and 9 goes beyond the scope of the present paper, it may be stated here that there is little doubt that Class 7 verbs are infixing. With respect to verbs in Class 5, however, we note that neat as the above analysis of verbs with the **-neu-* formant is, it is extremly questionable. Generally an analysis is illustrated with an example that is representative of a whole class or body of data which is being explained; the above analysis, however, is based upon a root and its stems in the present tense and perfect passive participle, which are actually anomalous[5] for verbs in Class 5. In fact, of the approximately fifty roots in Class 5 which are listed in Whitney (1885), $\sqrt{çru}$- 'hear' and $\sqrt{dabh}$- 'harm'[6] are the only ones which lack the syllable nucleus of the perfect passive participle stem in the present stem.

2.2.1. The root $\sqrt{çru}$- 'hear' (PIE *k̂leu-*). Although it is true that on the basis of limited Sanskrit data, the Infix Hypothesis can claim that the stem final *-u* of the perfect passive participle shows up in the present tense forms as the semivowel *u* of the old diphthong *au* which was later monophthongized to *o* in *çr̥ṇomi*, and as the *u* in *çr̥ṇumas*, there is strong evidence that militates against this analysis. First, let us

compare Sanskrit forms with their cognate forms in Avestan (cf. Pokorny 1959:605):

(5)	Sanskrit	Avestan
pres. sg. 3	*çr̥-ṇo-ti*	*suru-nao-iti*
perf. pass. ptcp.	*çru-ta-*	*sru-ta-*

Now if the *u* seen in the Avestan perfect passive participle *sruta* were located in the Avestan formant *-nao-* in the present tense form, it could not also be located elsewhere in the same present tense form; yet the segment *suru-* of *surunaoiti* clearly shows that the *u* is not located in the formant *-nao-*, but rather after the *r*, where we would anticipate it. The presence of the parasitic *u* before the *r* simply reinforces this analysis.[7] This leads us to conclude that stem-final *-u*, which one would expect in the present singular Sanskrit forms, is absent not because it is located in the reflex of the formant **-neu-* (which, as the Avestan data show, has its own *u*), but rather because the stem final *-u* has been irregularly syncopated.

This irregularity is further highlighted in a comparison of two perfectly typical and regular verbs of Class 5, $\sqrt{su}$- 'press out', which has a stem final *-u* that is retained in all relevant forms, and $\sqrt{1vr̥}$- 'cover', which lacks stem final *-u*.

(6)	$\sqrt{su}$- 'press out'	$\sqrt{1vr̥}$- 'cover'
pres. sg. 3	*su-no-ti* (*s-no-ti**)	*vr̥-ṇo-ti*
perf. pass. ptcp.	*su-ta*	*vr̥-ta-* (*vru-ta-**)

(I place an asterisk after unattested forms.)

If the Sanskrit formant *-no-* were a product of an older infix *-ne-* plus a stem final *-u*, the present singular 3 of $\sqrt{su}$- would have to be *snoti**, which is not attested, and the perfect passive participle of $\sqrt{1vr̥}$- would have to be *vru-ta-**, which is also not attested. Thus the data in (5) and (6) do not support the notion that the late PIE formant **-neu-* is the product of an infixed formant *-ne-* plus stem final *-u*.

2.2.2. The root $\sqrt{dabh}$- 'harm', (PIE *dhebh(eu)*- 'injure, shorten, deceive'; cf. Pokorny 1959:240). Whitney (1885:213) lists no forms whatsoever for this root which exhibit a trace of a stem-final -u; Pokorny (1959:240), on the other hand, includes not only the perfect passive participle listed in Whitney (1885), i.e., *dabdha*, but also the

form *a-dbhu-ta,* which he glosses as 'wunderbar (wonderful)', and which he derives semantically from the meaning 'der Täuschung unzugänglich (inaccessible to deception), unantastbar (inviolable)'.[8] Pokorny's explanation of the root final *-u* in *a-dbhu-ta* is that it is "von der Wurzelform auf *-u*", i.e., from the (variant) root form ending in *-(e)u*. However, even if we accept *a-dbhu-ta* along with *dabdha* as a derivative of $\sqrt{dabh}$- or PIE *dhebh(eu)*-, the *u* of *a-dbhu-ta* is still not evidence which compels one to accept the Infix Hypothesis, since the perfect passive participle *dabdha* as well as the present tense form *dabhnoti* are derived from the PIE root variant **dhebh*- just as the perfect passive participle *ɻddha* and the present tense form *ɻdhnoti* (< $\sqrt{ɻdh}$- 'thrive') are derived from the PIE root **al-dh*- 'grow' (cf. Pokorny 1959:26f.), both root forms which have no *-u*.

2. 2. 3. Thus we see that although the Infix Hypothesis offers a very attractive analysis in that it can essentially collapse three Sanskrit verb classes into one by assigning the differences of the classes to the stem final of the root rather than to the post-root formants which the Sanskrit grammarians identified and employed as the basis of their classification, this hypothesis is invalid for Class 5 verbs because it is based on patterns of a small number of verbs which are in fact anomalous, and which are accounted for independently of the Infix Hypothesis.

2. 3. Brugmann's analysis. Like Saussure and Hirt, Brugmann (1933:510f.) believed that a nasal element *ne* was the common denominator of verbs in the Sanskrit Classes 5, 7, and 9, and their cognates outside of Indic. He also agreed with them in assigning the ultimate origin of these classes to Proto-Indo-European. Brugmann, however, hypothesized that the element *ne* could originally have been a 'sentential element' (Satzelement), i.e., perhaps a particle or a prepositional adverb—here placed postpositionally, of course — or even a type of verbal auxiliary. Interestingly, Brugmann himself did not single out any one of the possibilities he identified as the most probable source.

Unlike Saussure and Hirt, however, Brugmann believed that the nasal element was not an infix, but rather a suffix appended to a root. He hypothesized moreover that there were two slightly different processes whereby the nasal classes could have developed:

> "*Entweder* war **ne* ein Satzelement . . . das ebenso durch nachfolgendes *-ā* oder *-eu* oder ein konsonantisches Element (Wort oder Formans) erweitert wer-

> den konnte wie irgend eine der sogen. ein-silbigen 'Wurzeln', und nun wurde z. B. mit **gu̯eu̯e-* **gu̯ei* teils **gu̯ei-ā* (ai. *jyā-*) teils **gu̯ei-nā* (*jinā́-*) gebildet, mit **stere-* **ster-* teils **ster-eu-* (got. *strau-jan*) teils **ster-neu-* (ai. *stṛṇo-*), mit **jeu̯e-* **jeu-* (ai. *yuvá-ti yau-ti*) teils **jeu̯-eg-* (*yoj- yuj-*) teils **jeu-neg-* (*yunáj-*). *Oder *ne* verband sich zunächst mit der einsilbigen Wurzel, und darauf erfuhr teils diese Verbindung teils die Wurzel allein Erweiterung durch *ā* usw." (Brugmann 1933:510f.).

Brugmann sought the presence of the semivowel *u* characterizing Class 5 not only language internally, as Saussure did in the case of *çr̥ṇomi* : *çrutas*, but also in cognates in other languages. For example, in explaining the source of the *u* in Skt. *str̥-ṇo-ti* from $\sqrt{str̥-}$ 'strew' for want of a *u* in the perfect passive participle (*str̥ta*), or in any other Sanskrit form related to *str̥-ṇo-ti*, Brugmann cites the presence of the *u* extension in the Gothic verb *strau-jan* 'to strew' (cf. Pokorny 1959: 1029, PIE 5. *ster-*).

Like Saussure and Hirt, Brugmann hypothesized that the nasal element *ne* plus *u* came to be reanalyzed as a unit. However, unlike these scholars, Brugmann clearly stated that, once the reanalysis had taken place in an originally small number of instances, the new suffix came to have a significantly wider distribution than it first had. There are three unsurmountable, related problems with Brugmann's account:

> 1. The first is that he, like the proponents of the Infix Hypothesis, did not—and perhaps could not—assign a specific function to the element *ne*. Because of that, he could not explain the presence and absence of this element in conjunction with a given root.
>
> 2. The second problem is that he could not assign a function to the extension *-u-* that he hypothesized, which precluded an explanation of its presence and absence not only with a bare root, but also with *ne* when compounded to a root.
>
> 3. The third problem is that Brugmann could not assign a function even at the prehistoric stage to the reanalyzed suffix *-neu-*, and thus within his theory, he could not explain the cause of its expansion.

3. The auxiliary hypothesis. In the following, I shall present evidence from the daughter languages of PIE which indicates that the ablauting formant *-no-* in Sanskrit, and its cognates in related languages, originated in an encliticized postposed auxiliary which antedated the split of the parent language into the descendant languages.

3. 1. Morphemic analysis. Formal analysis applied to data like those in (7) indicates that Sanskrit *-no-* (along with its cognates in related languages) has morphemic status:

(7)	$\sqrt{su}$- 'press out'	$\sqrt{1v\underset{\circ}{r}}$- 'cover'
pres. sg. 3	*su-no-ti*	*v*$\underset{\circ}{r}$*-ṇo-ti*
perf. pass. ptcp.	*su-ta-*	*v*$\underset{\circ}{r}$*-ta-*

Clearly, *su-* and *v*$\underset{\circ}{r}$*-* are root morphemes, *-ti* is a morpheme indicating the third person singular of the active indicative present tense, and *-ta-* is an allomorph of the morpheme of the perfect passive participle. What remains as residue in this analysis is, of course, the syllable *-no-*. However, just as we are compelled in morphemic analysis to recognize *-lor-* in *lovelorn* and *-o-* in *thermometer* as morphemes, although they are at best semantically or sememically opaque from a synchronic point of view, so we are compelled to recognize Skt. *-no-* as a morpheme. To go one step further, let us consider the following data, where we see two roots, each conjugated as a verb in Class 5 and as a verb in another class:

(8a) $\sqrt{dabh}$- 'harm'
dabh-no-ti (Class 5)
dabh-a-ti (Class 1)

(b) $\sqrt{dāç}$- 'make an offering'
daç-no-ti (Class 5)
daṣ-ṭi (Class 2)

Once again we have evidence that the element *-no-* has morphemic status, since, from a strictly formal point of view, it contrasts either with the thematic vowel, as in (8)(a), or with zero, as in (8)(b). Many additional examples could be cited. Clearly, however, although the data in (8) strengthen the argument that Skt. *-no-* has morphemic status, no amount of synchronic data will readily reveal the meaning of that element, just as no amount of synchronic data will readily reveal the original sememes of *-lor-* and *-o-* in English. Such morphemes may create a problem for the synchronic analyst, since they require the positing of a peripheral subclass of emic units. On the other hand, this sort of data is welcome to comparative and diachronic linguists, since they are not bound by the constraints of synchronic linguistics; rather, several strategies of internal and/or comparative reconstruction often yield excellent results with such data; cf. Hoenigswald 1965:68–71. To be sure, the ultimate identification of *-lorn* as a bound, alternate past participle of *lose* is a shorter route than the identification of *-o-* as

a stem formant; nevertheless, these examples show that comparative and diachronic linguists have data bases and procedures at their disposal which are closed to the synchronic linguist, and herein lies much of the strength of diachronic explanation. In like fashion, our search for the ultimate origin and subsequent development of *-no-* is not confined to monolingual synchronic data or to synchronic procedures.

3. 2. Sanskrit $\sqrt{nu}$- 'move . . . '. If we examine the conjugation of one verb after another in Class 5, it appears not only that *-no-* is a morpheme, but also that in its ablauting pattern, *-no-* behaves exactly as we would expect the root of a verb belonging to Class 2 to behave; that is to say, a verb conjugated in Class 5 appears to be, from a formal point of view, an uninflected verb root plus an encliticized finite athematic Class 2 verb. If we look for a verb in Class 2 which formally could be a candidate for the encliticized auxiliary, we note one, namely $\sqrt{nu}$-, meaning 'move' (Whitney 1885:91), 'remove' (causative, Macdonell 1924:147), 'stir, set in motion' (Surya 1981:395), 'go' (Monier Williams 1899:567, Surya 1981:395). Pokorny (1959:767) assigns Sanskrit $\sqrt{nu}$- to a PIE root **neu-*, which he glosses as 'einen Ruck machen (to make a sudden movement), . . . Stoss geben (to give a shove)' but also as ''besonders (europäisch) 'nicken (to nod), winken (to wave, signal)' ''. (I shall discuss the Proto-Indo-European root formally and semantically in 4.3.1. and 4.3.2 below.) Interestingly, according to regular sound changes, one would expect that, if this PIE root developed into a Class 2 verb in Sanskrit, it would have guṇa strengthening in the singular of the active present indicative, and the weak grade in the plural (and dual), e.g. *nomi** 'I move, go' : *numas* 'we move, go'. In fact, however, the reflex is attested in Sanskrit with vṛddhi strengthening in the singular of the active present indicative, e.g. *naumi*. At first blush, this formal discrepancy would seem to be sufficient evidence for us to reject $\sqrt{nu}$- and its PIE antecedents as candidates for the hypothesized postposed auxiliary verb in question. However, there are several statements in Whitney (1888) which indicate that the vṛddhi grade attested in this verb is not original, but rather is secondary. First, although Whitney (1888) remarks that ''the roots of the (second) class ending in *u* have in their strong forms vṛddhi instead of the guṇa strengthening before an ending beginning with a consonant'' (p. 238), he also indicates that the root $\sqrt{1stu}$- 'praise' had a present tense form with guṇa, e.g. *stoṣi,* alongside *stauti,* in the Rigveda, and in Whitney (1885), he indicates that the root $\sqrt{hnu}$-

'hide' had a present tense form with guṇa, *hnoti,* alongside *hnauti* (p. 208) in Epic Sanskrit. Moreover, Whitney also states, "the vr̥ddhi increment is specifically Indian" (1888:82), and "the . . . two (diphthongs) *ai* and *au* are held to be of peculiar Sanskrit growth" (1888: 12). Thus, to summarize, considering that

1. according to the regular sound change PIE *eu* → Skt. *o*, PIE *neu-* will become Sanskrit *no-*; and
2. Whitney states that vr̥ddhi strengthening is a secondary development in Indic; and
3. there are some guṇa forms which are attested for Class 2 roots in short *u*,

it is not unreasonable to conclude that *nomi* is an archaic reflex of PIE *neu-* preserved in the encliticized postposed auxiliary, whereas *naumi*, exhibiting itself in the non-encliticized form, reflects the more recent Indic development of vr̥ddhi.

3. 3. Greek *néō, néomai* 'go, come'. In the immediately preceding section, I stated that Pokorny posits a PIE root **neu-* which he glosses as 'einen Ruck machen (to make a sudden movement) . . . Stoss geben (to give a shove)' but also as "besonders (europäisch) 'nicken (to nod), winken (to wave, signal)'". As a reflex of this root he lists not only the Sanskrit root √*nu-*, but also Gk. *neú-ō* 'nod, wave'. (Reflexes in other branches are listed as well, but we are not concerned with them here.) From a strictly formal point of view, it seems reasonable to link Greek *neú-ō* with the PIE root (and its Sanskrit reflexes). From a semantic point of view, however, the etymological linkage of a Greek verb meaning 'nod, wave' with a Sanskrit verb meaning 'move, remove, stir, set in motion, go', as well as Pokorny's joining of the meanings 'einen Ruck machen, einen Stoss geben' with 'nicken, winken' in the gloss of PIE *neu-* seems to be poorly motivated.

If we look further in Greek, we come across a verb *né-ō* and its (deponent) middle *né-omai* 'go, come' which, from a semantic point of view, seem to be far better candidates to be cognates with Skt. √*nu-* than Gk. *neú-ō*. From a formal point of view, on the other hand, *né-ō, né-omai* would initially appear to be less likely to be cognate with Skt. √*nu-* than *neú-ō* seems to be, because the semivowel *u* is absent. However, if we consider the optional sound change noted in Goodwin and Gulick (1930:153 §611), "In some verbs the diphthong *eu* loses *u* . . . before the thematic vowel . . .", we realize that from a formal point of view, *né-ō, né-omai* (plural *neú-metha*) is just as likely a cognate of Skt. √*nu-* as *neú-ō*; moreover, from a semantic

point of view, *néō, néomai* is superior to *néuō* as a potential cognate of Skt. √*nu-*. Now Pokorny (1959:766) assigns Gk. *néō, néomai* to a PIE root *nes-* 'sich vereinigen (to unite, ally oneself), geborgen sein (be hidden, be in safety)', but because of the immediately preceding observations concerning phonological and semantic correspondences, I feel that some modifications of the etymologies of PIE 2. *neu-* and PIE *nes-* are in order. Within the framework of Pokorny (1959), I would propose that (a) PIE 2. *neu-* carry only the meanings 'nicken, winken', and that all Sanskrit forms be deleted from the entry; and (b) an additional root, PIE 3. *neu-* be recognized, with the approximate meanings 'go, come, move, remove, stir, set in motion' and the reflexes of Skt. *naumi, numas* etc. and Gk. *néō, néomai,* etc. be listed. (These Greek forms would then, of course, have to be deleted from the entry of Pokorny's (1959:766) root **nes-*, to which they do not in any event correspond semantically.)

4. Reconstruction. In the following, I shall first present a formal comparative morphological reconstruction of the PIE formant *-neu-*. I shall then present a comparative lexical reconstruction of the PIE verb *neu-*. (Although it will be seen that these reconstructions are of the simplest kind, i.e., they reverse one-to-one replacement patterns, they are nevertheless worth presenting here, since the rigor that underlies these reconstructions vouches for the validity of the results.) Finally, I shall argue that the two reconstructed morphemes were originally one, and that the formant developed as a phonological variant in a later stage of PIE.

4. 1. The PIE formant *-*neu*-. In his essay "The problem of linguistic subgroupings", Greenberg (1957:46–55, here p. 49) expressed in axiomatic form a principle which underlies all comparative reconstruction:

(9) "occurrence in at least two separate branches of a family is the common reason for assigning a feature to the ancestral language of the family as a whole."[9]

Hoenigswald (1965:119) built upon this principle in his efforts to establish a set of rigorous formal procedures to reconstruct phonological and morphological units. Generalizing Hoenigswald's procedures to include syntactic as well as phonological and morphological pro-

tounits, we may paraphrase his introductory remarks on comparative phonological reconstruction thus (cf. Costello 1983;9f. and Costello 1986:240):

(10) If an emic unit A of the ancestor language appears as an emic unit M in one daughter language and as an emic unit T in another daughter language, corresponding strings in the two descendant languages will be matched in such a way that M in one corresponds to T in the other. Such a pair of emic units, one in the first descendant language and one in the other, is a set of correspondences, and leads us to posit A in the ancestor language.

Graphically this may be expressed via the reconstruction diagram in Figure 1, where the Arabic numerals to the right of the symbols A, M, and T refer to contrastive and characteristic environment sets (cf. Hoenigswald 1965:119ff. and Costello 1983:39ff.).

(11)

	1, 2	M 1, 2	Daughter Language$_1$
Proto-Language	*A 1, 2		
	1, 2	T 1, 2	Daughter Language$_2$

Figure 1

In light of the statements in (9) and (10), we are in a position to apply the procedures of comparative morphemic reconstruction to the data in (1)(a) and (b). Since comparative morphological reconstruction is carried out with data from any two daughter languages belonging to different branches descending from the ultimate parent language, the input chosen for this reconstruction may come from any conceivable pair of different daughter languages listed in (1)(a) and (b), i.e., from Sanskrit, Greek, Hittite, Gothic, Avestan, or Armenian. For example, if we symbolize the Sanskrit morpheme *-no-* of *ǰ-ṇo-mi* as M, and the Greek morpheme *-nū-* of *ór-nū-mi* as T, and if we allow the numeral 1 to stand for the contrastive set of environments, and the numeral 2 to stand for the characteristic set of environments, then the following correspondence set may be tabulated:

(12) Sanskrit : Greek
M 1, 2 : T 1, 2

According to the principles in (9) and (10), the above data from Sanskrit and Greek suffice to reconstruct the PIE formant *-*neu*-, symbolized as A, for PIE (cf. Figure 1).[10,11]

4. 2. The PIE verb **neu-/nu-*. The principles stated in (9) and (10) enable us to apply the procedures of comparative reconstruction also to lexical root morphemes in daughter languages. Thus if we symbolize Skt. *nau-/nu-* of *naumi* : *numas* 'move, remove, stir, set in motion, go' as M, and Greek *né-/neú-* of *néomai* : *neúmetha* 'go, come' as T, and if we allow the numeral 1 to stand for the contrastive set of environments, and the numeral 2 to stand for the characteristic set of environments, then once again a correspondence set may be tabulated; cf. (12) above, since the correspondence set for the verb roots is parallel to that for the suffixes discussed in §4. 1. Likewise, according to the principles in (9) and (10), the above data from Sanskrit and Greek suffice to reconstruct the PIE root **neu-/nu-* 'go, come, move, remove, stir, set in motion',[12] symbolized as A, for PIE (cf. Figure 1 and note 10).

4. 3. In view of the formal identity of the PIE formant *-*neu*- and the PIE verb **neu*- 'go, come, move, remove, stir, set in motion' reconstructed in the preceding sections, it is reasonable to suggest not only that these morphemes might be related, but also that the formant *-*neu*- evolved as a variant of the verb **neu*-.

4. 3. 1. Formal considerations. As a matter of fact, there are numerous instances where one can determine that in a later stage of a language, a verb coexists with a formant which was, in an earlier stage, the very same verb functioning as an auxiliary; this auxiliary may or may not have been manifested by a morph or morphs which differed from the one(s) usually associated with the verb. Consider the following, for example:

(13a) Sanskrit *dātāsmi* 'I will give'; *asmi* 'I am'
(b) Italian *cantero* 'I will sing'; *ho* 'I have'

Skt. *dātāsmi* may be analyzed into nonfinite *dātā-* plus formant *-as-* plus conjugational suffix *-mi;* the formant *-as-* was formerly the verb

as- functioning as a postposed auxiliary; cf. Whitney 1888:335ff. (§942ff.), 391 (§1069). In parallel fashion, Italian *cantero* may be analyzed into nonfinite *canter-* plus *-o; -o* was formerly a variant of *ho* (itself a contracted form descended from a Vulgar Latin form; cf. Classical Latin *habēo*) functioning as a postposed auxiliary; cf. Vincent 1988:57, 293, 296, and Lockwood 1969:56f.

4. 3. 2. Semantic considerations. Although there are numerous instances in which Indo-European verbs meaning 'be' (e.g. **es-*, **bhū-*, **u̯es-*) and 'grasp' (e.g. **ghabh-*, **kap-*) have come to function as (meaningless) auxiliaries while also continuing to exist as verbs (cf. Brugmann 1916 (II. 3/2):497ff. and the handbooks for Indic, Hellenic, Italic, Germanic, etc., for copious examples), it is striking that on a smaller scale, a number of Indo-European verbs meaning 'go' share the same development. Consider the following, for example:

(14a) PIE *ei-* 'go' (Pokorny 1959:293) > Skt. $\sqrt{i}$- 'go' and Lat. *eō* 'go'
Sanskrit: indram evai 'tair arabhya *yanti* 'by means of them they keep taking hold of Indra' (Whitney 1888:359)
Latin: vocatum *īrī* 'to be called (passive future infinitive)' (D'Ooge 1921:341)

(b) PIE *u̯ādh-* 'go, pace' (Pokorny 1959:1109) > Spanish *va* 'goes'
Spanish: *va* a ganar 'he/she/it is going to win'

(c) PIE *ĝhē-* 'go' (Pokorny 1959:418) > English *go*
English: then he is going to read a book (~ then he goes to read a book).

There are two observations which should be noted at this point. First, a verb meaning 'go' may, by metaphorical extension, also carry the meaning 'to engage in an activity'; cf. Modern English and Latin:

(15a) *go* riding

(b) bonorum praemia ereptum *eunt* (Lewis 1889:346 [C. Sallustius Crispus, Iugurtha 85, 42])

Note that this sequence in English may be analyzed as verb plus object (where the [nonfinite] participial form is a so-called verbal noun or gerund). In Latin, the periphrasis consists of supine plus verb. Second,

in the case of all of the auxiliaries referred to in this section, as well as in §4. 3. 1, the roots in question essentially retain their lexical meanings 'go . . . ' (aside from the minor semantic changes which all morphemes undergo over time) when they function as verbs, but they lose these meanings once they are reanalyzed and function as auxiliaries. I propose that it is the metaphorical meaning of the verbs in (15) which is the link between a verb meaning 'go' and an auxiliary that is derived from such a verb.

4. 3. 3. The development of Late PIE *neu-* as an auxiliary. I propose that in a late stage of PIE, the verb **neu-* came to function as an auxiliary under certain circumstances; the data in (13) and (14) aid us in understanding this development. Just as PIE *es-* was retained in Indic as a verb $\sqrt{as}$-, but also became an encliticized postposed auxiliary, so too PIE *neu-* was retained in late PIE as a verb, but also became an encliticized postposed auxiliary. Moreover, just as earlier Skt. $\sqrt{i}$- 'go' was retained in later Sanskrit as a verb $\sqrt{i}$- with its original lexical meanings, but also became an auxiliary which lost the lexical meanings of the verb $\sqrt{i}$-, likewise PIE *neu-* was retained in late PIE as a verb with its lexical meanings, but also became an auxiliary which lost the lexical meanings of the verb *neu-*. (Parallel semantic developments are observed in the examples in (13)(b) and (14)(b) and (c) as well.)

For a verb to come to be viewed as an auxiliary in some or all of its uses, a syntactic as well as a lexical reanalysis must take place. By way of illustration, let us consider English usage before ca. 1750. As Curme (1931:22f.) indicates, the use of the auxiliary *do* plus infinitive, which he says was rare in Old English, became common in Early New English, and the periphrastic phrase in which it appeared was used interchangeably with the simple form of the verb:[13]

(16) 'Thus conscience *does make* (= *makes*) cowards of us all' (Shakespeare; Curme 1931:22).

The analysis of auxiliary *do* plus dependent infinitive was preceded, however, by another analysis, i.e. ". . . *do* was a full verb with an infinitive as object" (p. 22). Thus, the syntactic reanalysis of verb plus object to auxiliary plus dependent infinitive effected the lexical change from verb to auxiliary in such occurrences of *do*. (Grammarians of English readily point out that *do* as an auxiliary is "meaningless"; cf.,

for example, Traugott 1972:33 et passim; this is quite consistent with the above observations concerning the auxiliaries in [13] and [14]). Similarly, I believe, the sequence nonfinite object plus verb **neu-* underwent encliticization (cf. Skt. $\sqrt{as}$- in the periphrastic future, and the Vulgar Latin equivalent of Classical Latin *habēo* in the periphrastic future), and in some environments, was reanalyzed[14] as a dependent infinitive[15] plus auxiliary *-neu-* in late PIE. Like the verbs listed in (14) when they functioned as auxiliaries, *-neu-* then lost its lexical meaning.

Of the many types of restrictions on the distribution of auxiliaries, I will discuss very briefly only the three which involve PIE *-neu-*, namely (a) restriction with respect to tense, mood, voice, etc. in which auxiliaries occur; (b) restriction with respect to placement vis-à-vis the nonfinite head which auxiliaries accompany; and (c) restriction with respect to the lexical items with which auxiliaries occur. If we compare *-neu-* with other auxiliaries in daughter languages of PIE, we note that while it has definite limits on its occurrence, these limits are well represented elsewhere in the IE family. As far as its restriction to one tense stem is concerned, *-neu-* resembles Latin *sum* (which in the passive was restricted to the perfect stem system; cf. D'Ooge 1921: 340), Greek *eimí* (which in the mediopassive was restricted to the perfect stem system of the subjunctive and optative; cf. Goodwin and Gulick 1930:109), and auxiliaries in many other languages, where such restriction is not uncommon. Regarding its following the nonfinite head, *-neu-* resembles $\sqrt{as}$- and $\sqrt{i}$- (cf. (13)(a) and (14)(a) above) in Sanskrit, *sum* and *eo* (cf. (14)(a) and (15)(b)) in Latin, and *eimí* in Greek. With respect to co-occurring only with a limited set of lexical items (rather than being a wholly productive auxiliary), *-neu-* resembles the English passive auxiliary *be,* which has minor restrictions in not being able to co-occur with certain intransitives like *sleep* (but cf. Ger. *Es wird noch geschlafen*), Skt. $\sqrt{as}$-, which, as the periphrastic future auxiliary, is restricted in being able to co-occur only with nomina agentis (cf. Whitney 1888:335), and Yiddish *zayn,* the auxiliary of the periphrastic present, etc., which earlier had a wider, if not unlimited distribution, but which today is restricted to co-occurring with a type of participle of Hebrew origin (cf. Weinreich 1973:615 and Curmè 1922:285f.).

Although there are instances in which the restricted distribution of an auxiliary may plausibly be explained on phonological grounds (e.g., the form of the third person plural of the perfect and pluperfect middle and passive verbs with consonant stems in Greek; cf. Goodwin

and Gulick 1930:119), the above-mentioned cases, including *-neu-*, defy such explanation. What we do know, however, is that factors involved in determining the restrictions are different from language to language, and they may change, since distributions increase and decrease as time passes. Over the years, the English auxiliary *do* has experienced a significant increase in its distribution, whereas another English auxiliary, *gin,* suffered an increasingly narrower distribution, and has simply disappeared (cf. Traugott 1972:141). Since reflexes of *-neu-* do not consistently accompany cognates of roots from daughter language to daughter language (and within Indic, *-no-* is often not the only verb class marker for a verb), we may infer that its distribution was optional and wider in late PIE than in any of the daughter languages. In fact, aside from the case of Hittite, which will be discussed directly, the distribution of reflexes of *-neu-* in the daughter languages, especially Sanskrit, strongly suggests that the auxiliary, had it not already been encliticized in late PIE, might well have disappeared like English *gin.*

4. 4. Excursus: Hittite *-nu-*. I believe that the Hittite suffix *-nu-* provides evidence supporting the Auxiliary Hypothesis. Unlike its cognates in other branches of IE, Hittite *-nu-* not infrequently adds derivational meaning to the root concept of the verb in question; moreover, it functions transparently in certain derivational processes. In the following, I will first briefly enumerate the derivational meanings of *-nu-* which accompany root morphemes, and the functions of *-nu-* in verbal derivation. I shall than discuss reasons which lead us to conclude that some of these developments took place during Indo-European times, and others, only after Anatolian split from the parent language.

Kronasser's (1956:173f.) and Friedrich's (1974:74, 97f.) presentations of Hittite *-nu-* indicate that the following derivational meanings are added to the roots of Hittite verbs:

(17a) factitive: *dašša-nu-* 'strengthen' from *dašš̆u-* 'strong'
(b) causative: *ar-nu-* 'move, bring' from *ar-* 'arrive at'

Furthermore, *-nu-* functions in deriving verbs from nouns and other verbs:

(18a) denominative: *nuntar-nu-* 'hasten' from *nuntar-* 'haste'
(b) deverbative: *pahs-nu-* 'protect' from *pahs-* 'protect'

Finally, we note that the addition of this formant may also serve to turn a verb with active form but middle meaning into a verb with active meaning:

(19) *wah-nu-* 'turn' from *weh-* 'turn one's self'

A brief review of the development of the auxiliary *do* in English[16] will be instructive in understanding the behavior of *-nu-* in Hittite. The auxiliary *do* developed from certain uses of the verb *do,* specifically when *do* was combined with a direct object *X* to yield a verb phrase meaning 'perform *X*'. Depending upon the context, a more factitive[17] shade of meaning could also be conveyed, as is attested well into the Modern English period:

(20) Sometimes to *do* (i.e., make—JC) him *laugh* she would essay To laugh (Spenser, *The Faerie Queene,* II, VI, VIII; Curme 1931:443).

At a later point, when the object of *do* was a so-called verbal noun or infinitive, the predicate was reanalyzed as a periphrastic verb phrase, such that *do* was interpreted as a meaningless auxiliary, the function of which was to indicate the tense, person, number, etc. of the subject, and the infinitive was interpreted as the (non-finite) main verb. From Old English times until approximately the first half of the eighteenth century, this periphrastic verb phrase was in free variation with the verb phrase containing only a simple finite verb; also, both could be accompanied by objects and other complements. (After the mid-1700's, texts exhibit auxiliary *do* pretty much as it is used today: functioning as an emphatic, and as an obligatory marker of tense, person, number, etc. in most questions and negative sentences.)

Hittite *-nu-*, adding a 'factitive' meaning to a root as in (17)(a), is simply a reflex of the first stage that I hypothesize in the development of the auxiliary *-neu-* in late PIE; that is, *-nu-* in such instances is not being used as an auxiliary, but as a verb, (here) with the lexical meaning 'make', just as was noted by Curme—cf. (20) above—in the earliest stage of the evolution of English *do*. Hittite *-nu-*, adding a 'causative' meaning as in (17)(b), likewise reflects this oldest stage, but with the metaphorical extensions also observed in the evolution of English *do* (cf. (20) and note 17). Example (18)(a), in which Hittite *-nu-* functions as a denominative affix, also exhibits 'factitive' and

'causative' meanings, though in a less concrete way than (17)(a) and (b).

Hittite *-nu-*, used as a deverbative affix as in (18)(b), reflects the stage in which *-neu-* was reanalyzed as a meaningless auxiliary in late PIE, just as the English *do* evolved as a meaningless auxiliary from the verb *do*. It is in the usage that Hittite *-nu-* most closely parallels its cognates in related languages.

Most interesting of all is the use of *-nu-* in (19).[18] Unusual as it is for a verb with active form to have middle meaning (i.e., the mirror image of a middle deponent), the phenomenon would seem to be one inherited from PIE,[19] since it is noted—albeit with some differences—also for Greek, and there is little likelihood that borrowing or chance are causes of this correspondence between Hittite and Greek. Goodwin and Gulick (1930:263, §1231) observe for Greek that "some transitive verbs have certain intransitive tenses, which generally have the meaning of the middle voice, e.g., *héstēka* 'I stand', *éstēn* 'I stood' or 'I came to a stop' from *hístēmi* 'set' . . ." Semantically there are striking parallels between the Hittite and Greek pairs, and these become particularly clear if one includes in the glosses of Greek *héstēka* and *éstēn* paraphrases of the gloss of *hístēmi: héstēka* 'I set (pres.) myself', *éstēn* 'I set (past) myself'; i.e., 'middle' formations, as Goodwin and Gulick imply, rather than only the suppletive glosses 'stand', 'come to a stop', respectively:

(21)

Hittite	Greek
	Middle Intransitive
weh- 'turn one's self'	*héstēka* 'I set myself, stand' *éstēn* 'I set myself, stood, came to a stop'
	Active (Factitive) Transitive
wah-nu- 'turn X (i.e. make X turn)'	*hístēmi* 'I set X' (i.e. make X stand, come to a stop)'

Where the Hittite differs from the Greek, of course, is in giving derivational rather than inflectional (tense-aspectual) formal expression to the distinction between middle intransitive and active (factitive) transitive. I hypothesize that, at some point, speakers of Hittite consciously chose to include this formal distinction because the old factitive meaning associated with *-nu-* was still felt in their language, as (17)(a), (b), and (18)(a) indicate. Had this been a later PIE develop-

ment rather than a Hittite one, we might have seen some parallel uses of the reflexes of *-neu-* in daughter languages other than Hittite. As far as we can see, however, speakers of Greek had no such option for a verb like *hístēmi,*[20] since the cognate formant *-nŭ̄-* in their language no longer reflected any pre-auxiliary meaning. Rather, with respect to this verb, speakers of Greek were compelled to link temporal-aspectual features with lexical (voice) idiosyncracies. (Limitations of space do not permit further discussion of this and related phenomena; cf. Brugmann 1916 (II 3/2):678ff. and Goodwin and Gulick 1930:263ff. for additional details.)

Thus, we see that there are uses of *-nu-* in Hittite which do not have correspondences in other daughter languages; these usages parallel those which have been documented for English *do,* from the earliest period, Old English, until about the middle of the eighteenth century. Since the other daughter languages of PIE use reflexes of PIE *-neu-* only in a way which parallels the latest use of English *do* (*before* the sweeping changes observed in the second half of the eighteenth century), namely, as 'meaningless' *do,* it is reasonable to hypothesize that Hittite archaically preserves usages of late PIE *-neu-* at various stages along the way toward becoming a 'meaningless' auxiliary,[21] whereas the other daughter languages preserve only the last stage, meaningless *-neu-*. However, although Anatolian thus appears to be more archaic than other branches of IE because of its several uses of *-neu-*, it is at the same time surprisingly innovative in one of its uses of these archaisms, as (19) shows.

5. Conclusion. To conclude, I would like to summarize the arguments that I have set forth and attempted to support in this article. On the basis of internal data in Sanskrit, and comparative data from Avestan, I demonstrate that Saussure's explanation of the formant *-no-* as an infix in the fifth class of Sanskrit verbs is untenable.[22] On the basis of evidence from Indic and Hellenic, I advance the notion that this Sanskrit formant, along with its cognates in other branches of Indo-European, is the reflex of a later PIE postposed auxiliary which descended from a PIE athematic verb, **neu-* 'go' (the 'Auxiliary Hypothesis'). I argue that under certain conditions, this verb, like several other IE verbs sharing the meaning 'go', underwent metaphorical extensions, and came to mean 'do *X*, perform *X*, make *X*'. Like Lat. *facio* in *benefacio,* PIE *neu-* optionally became encliticized; then, like English *do,* **neu-* evolved in certain environments from a verb into a so-called meaningless auxiliary. Hittite *-nu-* conveys seemingly dis-

parate meanings which are absent in the Sanskrit cognate *-no-* and in cognates in other daughter languages of PIE as well; the Auxiliary Hypothesis explains the presence of these meanings in Hittite, and the relationship that they have to one another.

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APPENDIX

Ablaut variants of formants

Avestan: *-nāv-* ~ *-nao-*
Greek: *-nū-/-nŭ-*
Proto-Indo-European: *-ne-/-n-*
Proto-Indo-European: (-)*neu-*/(-)*nu-*
Sanskrit: *-no-/-nu-*

ENDNOTES

[1]For the sake of brevity, I will not indicate the ablaut variants of formants in the body of the paper unless they have a direct bearing on the immediate discussion. A listing of the relevant ablaut variants will be found in the Appendix.

[2]This etymology of Gothic *rinnan* is not accepted without reservation by all Germanic scholars, because, from a strictly formal point of view, *rinnan* is not necessarily cognate with the above-cited non-Germanic forms; see e.g., Prokosch 1939:156. However, the plausible formal correspondence is supported by semantic similarity, and although it is not crucial for any argument set forth in this paper, Pokorny's etymology is accepted by this writer.

[3] Kronasser (1956:173) claims that the Greek, Avestan, and Armenian roots in (1)(b) are cognate with the forms in (1)(a). Pokorny (1959:61), however, maintains that these roots are reflexes of PIE 2. *ar-, er-* 'apportion; (middle) to acquire'. Although it is not crucial for any arguments set forth in this paper, Pokorny's etymology is accepted by this writer on the strength of the semantic disparity between the Greek, Avestan, and Armenian words in (1)(b) on one hand, and the Sanskrit, Greek, Hittite, and Gothic words in (1)(a) on the other hand. In any event, all citations in (1)(a) and (b) exhibit reflexes of PIE *-neu-*.

[4]In the interest of brevity, this presentation of the infix hypothesis follows very closely the one found in Mayrhofer's (1965) *Altindische Grammatik*.

[5]A situation which would be roughly analogous to this would be to use the aorist present verb *galukan* 'to shut, lock' as the basis for an analysis of the second class of strong verbs in Gothic. I do not mean to imply here that there are phonological or morphological parallels between these Sanskrit and Gothic verbs and their classes, but only that from the point of view of verb classes and their members, *galukan* is about as typical of its class as $\sqrt{çru}$- is of the class to which it belongs.

[6]See, however, §2. 2. 2. below for details.

[7]As Brugmann (1930 (I/2):822) notes, the parasitic vowel is optional; "Im Avest. Anaptyxis besonders nach Spiranten . . . *i, u* vor *ri, ru* z. B. . . . *surunaoiti srunaoiti* 'er hört' . . ." Interestingly, the parasitic *u* may show up in Avestan cognates of Sanskrit words regardless of whether the Avestan *r* is a reflex of PIE *l* or PIE *r*; cf. PIE *deru-* 'tree', Skt. *dāru-* 'wood', Av. *dāuru-* 'tree trunk' (Pokorny 1959:214).

[8]I am reluctant to accept Pokorny's derivation of *á-dbhu-ta-* from PIE *dhebh(eu)-* for semantic as well as phonological reasons: (a) I find it rather implausible that the meaning 'wonderful' should develop from 'not injure(able)'; and (b) no inflectional or derivational realization of $\sqrt{dabh}$- listed in Whitney 1885 exhibits *-u*, which would, of course, derive from a PIE variant root *dhebheu-*. Rather, I suspect that *a-dbhu-ta* originates from a different root, and that it is merely semi-homophonous with Sanskrit reflexes of PIE *dhebh-*. Nevertheless, since I have no concrete alternative etymologies to offer, I shall provisionally accept Pokorny's derivation, and accordingly shall seek to explain the implications of *á-dbhu-ta* for the Infix Hypothesis.

[9]That is to say, one is accounting for a correspondence in two or more daughter languages by claiming that the correspondence is the result of inheritance from a common ancestor language. It is assumed, of course, that preceding the application of this axiom to the data, one has already eliminated the possibility of borrowing or chance (including drift), or, in the case of certain lexical items, onomatopoeia, to account for the observed correspondence; cf. Greenberg's (1957:35–45) essay "Genetic relationship among languages", particularly p. 37.

[10]Since comparative morphemic reconstruction retrieves the morphemes of a proto-language, but not necessarily the morphs that manifest these morphemes, we are dependent on the phonological reconstruction of the PIE consonant and vowel inventories, their distributions, and the diachronic rules that derive forms in daughter languages from that reconstruction (all of which has appeared in earlier literature) to determine the morphs that manifested the proto-morpheme A; cf. Hoenigswald 1965:70.

[11]Regarding the sememe of the reconstructed morpheme A, cf. §§4. 3. 2. and 4. 3. 3.

[12]Following Pokorny's practice, at least with respect to the roots discussed in this paper, I indicate what Anttila (1972:336f.) calls a disjunctive definition of the roots reconstructed here; in other words, the sememe is reconstructed as the Boolean sum of the meanings of the reflexes. It is conceivable, however, that a conjunctive definition (i.e. an intersection of the sememes of the reflexes) would be just as appropriate, in which case the sememe would simply be 'go'. Unfortunately, a thorough discussion of choosing a disjunctive over a conjunctive definition, or vice versa, which surprisingly is still lacking in the literature dealing with morphological/lexical reconstruction, goes beyond the scope of the present paper, but it is my intention to return to this topic in a later paper. In any event, as will be seen below, either definition, disjunctive or conjunctive, is sufficient in the discussion of the development of the periphrastic construction in the sections below.

[13]Contemporary usage of this construction, as a so-called emphatic, and in questions and negation, goes back approximately to the second half of the eighteenth century; cf. Curme 1931:22f. for details.

[14]Reanalysis is a phenomenon which, to say the least, can bring about far-reaching changes in language. Frequently reanalysis effects an emergence: it can create a new part of speech (e.g., the preposition), a new subset of a set (e.g., the articles as a subset of the set adjective), or simply a new member of a set (e.g., *for* as a member of the set complementizer). However, not every emergence necessarily leads to a new contrast; the product of a reanalysis may result in an instance of free variation. A case in point is the emergent English complementizer *for,* and the emergent structure which it introduces. Before the preposition *for* was optionally reanalyzed as a complementizer, the complementizer *that* introduced a subject clause (cf. Curme 1947:157):

(A) It is necessary *that* he go.

After the (optional) reanalysis of the dative of reference, *for him*, in structures like

(B) It is necessary *for him* to go,

to yield *complementizer plus subject-of-infinitive phrase, for him to go*, both *that* and *for* in environments like *it is necessary* . . . served as complementizers in free variation with one another, and more importantly, the structures introduced by these complementizers came into a relationship of free variation with one another as well. Such cases of reanalysis are very instructive. They tell us that the emergence of a structure which is in free variation with an already-existing structure need not have been brought about to fill some gap which may have existed previously in a language. Rather, the emergent structure may simply be incidental to a reanalysis of an element (in this case, a preposition) which had no structural significance for or connection with either the original structure (i.e. (A)) or the emergent structure (i.e. (B)). This becomes even clearer upon consideration of the optionality of the reanalysis; the dual structural interpretation that may be assigned to the string in (B) at one and the same time is a phenomenon which may be thought of as the linguistic equivalent of an optical illusion, a single picture which the viewer may perceive serially (some claim simultaneously), without cause, as two images. I hypothesize that a reanalysis parallel to the one involving English *for* took place with PIE *neu-*. That is to say, this verb was reanalyzed as a meaningless auxiliary, and the emergent periphrastic verb phrase incidentally entered into a relationship of free variation with the already-existing simple (i.e., synthetic) verb phrase.

[15]I use the term infinitive here not in a narrow sense referring to a specific form, but in a general sense indicating any verb form which is not finite.

[16]In order to avoid making numerous specific references to Curme 1931:22f. throughout the discussion below, I will note at this point that details of my review of the auxiliary *do* in English are derived from that source exclusively.

[17]Typically, grammarians refer to this use of *do* as 'causative'; cf., for example, Curme 1931:22, 443, Traugott 1972:121, 140f., and Lightfoot 1979:117. While this interpretation is certainly possible, I believe that in such instances, 'causative' is a metaphorical extension of 'factitive', which clearly derives directly from the lexical meanings of *do* (cf. Costello, forthcoming, "Periphrastic *do* as an innovation in Proto-West Germanic").

[18]Dr. Silvia Luraghi of the Chicago Hittite Dictionary Project has very kindly sent me a copy of her pioneering forthcoming paper, "I verbi derivati in *-nu-* e il loro valore causativo", in which she identifies four additional verbs like *weh- : wah-nu-*, thus firmly establishing this subclass of verbs for Hittite. Dr. Luraghi's treatment of these and other verbs is largely language-internal, rather than comparative, and thus is quite different from my own. Needless to say, a comparison of the two approaches goes beyond the scope of the present paper.

[19]Instances of this phenomenon in later daughter languages, like German (e.g., *ich heisse Meyer* 'I am called Meyer' and *er ist nicht zu erreichen* 'he cannot be reached') may be traced back to verb forms which exhibited mediopassive inflections at an earlier time; they are thus unrelated to the phenomenon discussed here.

[20]To be sure, the usual situation in Greek was that middle endings could be used to indicate middle meaning. However, in the case of *hístēmi*, Greek may reflect the original situation that scholars like Brugmann (1933) have hypothesized for PIE, namely, ". . . dass zwischen den Endungen *-tai : -ti, -to : -t* usw. nur ein Ablautsverhältnis bestand, dass *ursprünglich* gewisse Media tantum den medialen Sinn nur kraft der Bedeutung ihrer Wurzel oder des verbalen Stammes hatten, dass bei ihnen sich dieser Sinn mit der Endung assoziierte und dass man *alsdann*

anderwärts Formen auf *-tai* usw. mit medialer Bedeutung neben solche auf *-ti* stellte (Italics mine—JC)" (p. 599). Cf. also Brugmann 1916 (II 3/2):590f., 685f., Buck 1933:237, and Kerns and Schwartz 1972:5, 26.

[21]From this we may also conclude that encliticization in late PIE was not restricted to instances where there were auxiliaries; rather, encliticization could also affect verbs in certain environments; cf. also Latin *facio* 'do, make, perform' and *benefacio*.

[22]Unfortunately, considerations of space prevent me from discussing a somewhat modified later version of Saussure's analysis, proposed by Benveniste in 1935 within the framework of his so-called theory of [Proto-Indo-European] roots; cf. Lehmann 1952:17f. for a consise discussion. Benveniste's analysis also bears a striking resemblance to that of Brugmann (1933), a fact infrequently noted; cf. §2.3. above. Suffice it to say here that I believe the arguments presented above against the analyses of Saussure and Brugmann obtain (mutatis paucis mutandis) for the analysis of Benveniste as well.

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Replies and Discussion

Reply to the review by Alfred Bammesberger of Graustein, G., G. Leitner, eds., 1989. *Reference grammars and modern linguistic theory,* Tübingen: Niemeyer, Word 42:196–199, 1991.

GERHARD LEITNER

Most researchers will agree that reviews are a matter of scientific evaluation of some published piece of research. They should have nothing to do with the proclamation, or denunciation, of political ideas. The review by Alfred Bammesberger (henceforth B) of this book (abbreviated as RG) which I co-edited with a colleague from the University of Leipzig (in the former German Democratic Republic), fails in matters of scientific rigour and is so heavily biased politically that a rejoinder is called for. This rejoinder is even more urgent because its style and tenor are unfortunately not untypical of the scientific climate in Germany under the impact of German unification, and so readers will be interested to see how a fortunate political event bears upon science in this country.

RG is the result of a joint effort between the two editors to discuss, within the 14th International Congress of Linguists in Berlin (East) in 1987, the potential impact of recent research in a variety of fields of

linguistics on the design, content and influence of modern "scientifically valid descriptions of particular languages that can be used as a basis for derivative, pedagogic grammars or dictionaries for language teaching and the like" (RGvii). This effort was vigorously supported by R.H. Robins (SOAS, London; member of CIPL). We invited contributions from several linguistic persuasions, such as Functional Grammar (S. Dik), relational grammars (Liceras), cognitive linguistics (Dirven), integrational linguistics (H.-H. Lieb), Praguian linguistics (Tarnyikova and Dusková). Other papers dealt with linguistic pragmatics (Auwera and Hoffmann), language typology (C. Lehmann), variation studies (Leitner), text linguistics (Thiele and Graustein), and from the history of grammaticology (Stuurman). The papers dealt with such languages as Czech, German, Dutch, Latin, English, French, and Spanish. This symposium continued earlier research edited by Leitner (1986) and followed up in Leitner (1991). RG is thus part of a broadly based effort to focus interest on reference grammars and other reference materials and to probe to what extent theoretical insights are useful "in solving practical problems of individual humans and human societies" (Moravcsik 1980:18).

Let me now turn to Bammesberger's review and make three points: first, the alleged factual errors of the book and the book's scope; second, B's own vision of reference grammars; and, third, the role of his political defamations.

B makes one believe that the book contained only a few contributions by some Germans and is confined to English. But as I just indicated, there is a very international set of contributors and a large number of languages dealt with. B limits his review to papers by Leitner & Graustein, Dirven, Lehmann and Thiele (all German or working in Germany). There is only one contribution that B finds "useful in this field" (B197) of grammar writing, viz. the one by Dirven, who is a Belgian. "Other contributions are of inferior quality" (B197). Judgements are the business of the reviewer but let us see how he bolsters them.

B argues that the contributions in RG had the "young and adolescent pupil" in mind as "the prototypical user" (B197). This claim is based on a quotation from Leitner and Graustein (RG3). But let me put his quotation in context:

> "But the evolution of linguistic thinking has not been the only influence on the structure and content of grammars. As mentioned above, they were also shaped by the assumed needs of their intended users. The young or adolescent pupil has been the prototypical user. Other types of users and new contexts have emerged

since the middle of the last century: the (university) student and teacher of (modern) languages; the language departments at universities; the extension of the teaching of foreign languages in secondary schools from a small self-selected elite to all persons that attend school." (RG3)

As already indicated above, the editors and contributors obviously had in mind reference grammars for advanced students, teachers, language experts, and linguists (see also the quotation from the preface above (RGvii). They did not think of derivative (low-level) pedagogical, let alone learning, grammars for beginners or intermediate learners.

C. Lehmann, who work within linguistic typology, addresses the issue of how grammars can be devised that are truly comparative, irrespective of the language and language type under investigation. Such a perspective certainly has implications for academic grammars since they must frequently refer to other (similar or quote different) languages for specific target groups. B finds this paper "particularly worrisome" (B197) because L allegedly raises the expectation that 'comparative grammars' are "somehow connected with comparative grammar in the traditional sense". He then blames L for not addressing the "young and adolescent pupil" and for being unclear about the motivation of a comparative grammar. Now, what L does is to explicitly exclude derivative pedagogical grammars and proposes important scientific postulates that, even though some may seem self-evident, need to be stated for scientific rigour. Let me put the first of B's quotations into its fuller context; the second can be checked easily by the reader in RG(143):

"Definition: A language description is an encyclopedic description of a language the contents and form of which are defined with respect to linguistics as a science.

The linguistic description here envisaged scientifically describes one natural language, the object language, in terms of another natural language, the background language (also called metalanguage). It is one kind of language description.

Other kinds are, e.g., a pedagogic description or a general purpose description for an encyclopedia. Disregarding these for the rest of the discussion . . . (RG134)

B failed to see the point. He also finds much fault with Thiele, arguing, for instance, that Thiele quotes and following sentence with approval (B199): "Neubert claims a linguistic training which is based on the general principles of Marxist-Leninist language theory is the theoret-

ical and methodological basis of language studies." (quoted from RG274). Here is the full context:

> "The best suited linguistics is the body of accurate descriptive methods in different situations. Theoretical and methodological foundations of the disciplines to be studied are essential, indeed the backbone of an academic training at universities. In quite another context, i.e. from the point of view of the status of linguistic sciences, Neubert (1980:8) has supported this attitude with regard to studies of English. Neubert claims a linguistic training which is based on the general principles of Marxist-Leninist language theory is the theoretical and methodological basis of language studies.
>
> This can, however, only be part of the answer to the basic question raised above. Equally important—if not even of paramount importance—is the problem connected with the status and the tasks of teachers carrying out their function in society." (RG274)

In other words, Thiele does not adopt Neubert's statement without qualification, which, after all, described a fact in 1987, long before anybody dreamt of German unification.

It should be clear that B's review fails in every aspect of ordinary standards of scientific rigour and intellectual integrity. He not only gives a very limited account of RG's scope but misconstrues what he selects entirely. B admits that "in many instances he has not been able to unravel the meaning of passages" (B198) but attributes that to the lack of command of English of people such as Lehmann, Dik, Auwera, etc. "It seems doubtful whether a native speaker of English was asked to check through the whole text", he laments (B198).

Let me now turn to the second point, viz. to what B sees as important characteristics of reference grammars. He makes four points: first, grammars "must by all means be oriented towards practical ends" (B198); second, grammars must reflect the fact that "English is an Indo-European language" (B198); third, in line with this, that "In reference grammars a minimal account of language history is never of harm" (B199); and finally, that reference grammars (for the "young and adolescent pupil", mind you) deal with phonology, morphology, and syntax." (B199). B's ideas relate to the conception of "grammar" and what grammars are supposed to be doing. No doubt, there are such grammars that follow this time-honoured traditional pattern (Leitner 1991). For low-level teaching-oriented grammars for beginners this may be the right thing to do. Good modern grammars for the type of users RG had in mind deal with morphology and syntax in relation to semantics and pragmatics; with usage (divided or not); with national varieties and stylistic variation; etc. They deal with phonology (segmental and suprasegmental, to use traditional terms) *only* if this is

necessary to understand the 'grammar' of a language or the communicative, i.e. textual or discoursal, uses to which some construction or word can be put. In all: they look at those matters that research has shown to be of value to researchers and learners and teachers and make grammars useful in a communicative teaching context. B's grammars would fail on these accounts.

My third point involves political proclamations and defamations. It is easy to show B's intent. "The book was put together", B says, "by editors who work in what was until October 2, 1990 the German Democratic Republic." (B198). Now even a professor from the south of Germany is aware of the fact that one of the editors' affiliations (my own) is the Freie Universität Berlin in Berlin (West). But what is the point of bringing in such information in the first place? To understand this, we must look at the way B constructs his text. The above sentence leads into the criticism of Thiele's paper, see above, which itself leads into the final paragraph. I quote:

> "One could shrug off this perverse nonsense [Neubert's and Thiele's opinions, G.L.] and say that those times are happily over. I remain depressed after reading this volume . . . Evidently devoted and vibrant scholars were not given a chance to develop in a truly democratic atmosphere." (B199).

Much could be said in reply. Let me say this. First, the textual passage quoted here invites the inference that renowned scholars let themselves be misused by a couple of incompetent socialist editors. This inference is, I find, monstrous. Second, he misuses the review to proclaim his own political ideas, or perhaps malaise (he "remains depressed"). Now I, as one of the editors, was a frequent guest at a number of formerly GDR universities (always incidentally financed by the Ministry of Intra-German Relations, with a minister of the Christian Democratic Union as its head). Many Germans of all political persuasions and, certainly, all political parties, agreed that one had to do everything to alleviate the division of Germany, to increase the number and intensity of contacts, etc. It is a happy fact that German unification came about so unexpectedly so that a new climate of scientific work can be developed.

But I can see no justification whatsoever for the denunciation of those who have worked for years and years to help bring about that result (and that includes people from all over the world) or of those who lived and worked in the former GDR. The book certainly provides *no* basis for such a move; on the contrary it provides a solid basis for future joint East/West research in a key area of the interface of theo-

retical, descriptive, and applied linguistics. And the international set of contributors shows that this evaluation is shared by many.

It is distressing, but very typical of the German academic climate of opinion, that people like B try not only to continue the division of minds but also to accentuate it, instead of helping to bring about unity.

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Rejoinder

ALFRED BAMMESBERGER

In my review I wrongly said that the two editors worked at what was the former German Democratic Republic. Professor Leitner is affiliated to the Free University, Berlin. I regret the error and apologize for it. Otherwise I stand by what I wrote in the review.

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Review Article

RAY JACKENDOFF. *Semantics and cognition.* Cambridge, Massachusetts/ London, England: The MIT Press. 1983. xiii + 283 pp.

GEORGE LAKOFF. *Women, fire, and dangerous things: What categories reveal about the mind.* Chicago and London: The University of Chicago Press. 1987. xvii + 614.

Reviewed by EUGENE H. CASAD

1. Introduction. One of the spinoffs of the splintering of the transformational generative grammar paradigm has been the rise of an increasingly influential approach known as cognitive linguistics. Representing a radical departure from the methodology and assumptions of generative grammar, cognitive linguistics is nevertheless far from a monolithic school of thought, a point that the content of this review will reflect clearly. The two volumes under review here nicely illustrate both the shared disenchantment with the generative tradition, as well as the variation that exists within the field at the present. Nevertheless, they contrast sharply in the particular solutions that they offer. Lakoff argues forcefully against a general methodology that he calls OBJECTIVIST, whereas Jackendoff, while trying to distance himself from a model of semantics based on mathematical logic, nonetheless comes up with a basically generative model that seems rather closely related to the Objectivist paradigm.

2. Jackendoff. Jackendoff starts off on solid ground by noting that recourse to both psychological and linguistic phenomena are necessary in order to give an adequate account of semantics (p. 3). The strength of his stance is demonstrated by his claim that the the study of semantics is the study of cognition (Ibid.)

In establishing his foundations, Jackendoff sets down four central constraints on a theory of semantics (p. 11). These include the following:

> EXPRESSIVENESS: the need to be observationally adequate, i.e the theory must be capable of expressing all the distinctions that any given language makes.
>
> UNIVERSALITY: the need for a stock of universal semantic structures, which allows us to account for why we can translate the vast majority of ideas from one language to another.
>
> COMPOSITIONALITY: a principled way for combining simple structures into more complex ones.
>
> SEMANTIC PROPERTIES: a semantic theory must account for the following kinds of semantic properties: (1) synonymy, (2) anomaly, (3) analyticity, (4) presupposition and (5) "valid inference."

Jackendoff makes even more general use of two additional constraints. The first, he calls the GRAMMATICAL CONSTRAINT. By this, he means that the form of the grammar should allow one to express generalizations about both the syntax and the lexicon that would ordinarily be left unexpressed by other theories that would consider the relationship between the observed phenomena to be arbitrary (p. 13).

A second constraint works hand in hand with the grammatical constraint. This is the COGNITIVE CONSTRAINT, which Jackendoff construes as the need for a level that ties information gained from our peripheral perceptual systems such as the visual, auditory, tactile and kinesthetic sensor into the information conveyed by language (p. 16). Thus he goes on to state his "Conceptual Structure Hypothesis" which asserts that conceptual structure consists of a single level of mental representation at which linguistic, sensory and motor information all meld together compatibly (p. 17).

What is obviously missing from all these constraints is that of psychological and linguistic reality. In other words, the analysis must conform to what the native speaker knows about about his language (cf. Langacker 1987:30,32). Jackendoff's criterion of expressiveness, as stated above, does not in itself guarantee this result. Regarding universality, there is no need to attribute it to semantics, but rather a strong case can be made that semantics is actually language specific and culturally and experimentally determined (cf. Lakoff Pp. 208,

212, 282, 335, 366, 377; Casad 1988a). Regarding compositionality, Jackendoff's analysis of BE, which I discuss later, completely ignores it, whereas his list of semantic properties is a direct carryover from Katz and Postal (1964).

Jackendoff assumes that a grammar of a language is a formal object, one that has several modular rule systems that relate various kinds of structures that are either generated by one rule component or another or are affected in some way by the rules (p. 9ff.). Thus, for this book, Jackendoff assumes a version of the extended standard theory of generative grammar and its offspring (Ibid.).

The rules that link semantic representations to syntactic structures, formerly called **projection rules** under the extended standard theory of generative grammar,, now appear as **correspondence rules.** Beyond this, Jackendoff posits a system of **semantic well-formedness rules,** which provide both an inventory of semantic universals and a set of ways for felicitously combining them. This kind of grammar is abstract in several ways, one of which leads Jackendoff to try to exclude on-line processing considerations from his analysis (p. 7); however, his repeated references to the topic show that he cannot insulate himself against cognitive processing (cf. pp. 125;149;155–6).

3. The upside of things. One surprising feature of this work was the number of points that Jackendoff makes with which I agree. To begin, Jackendoff provides a clear and informative section on the Figure-Ground relationships much studied and described by the Gestalt psychologists (pp. 24–27). His examples were a pleasing mixture of the new and the old for this reviewer. Likewise, his section on the perceptional principles of grouping as described by Wertheimer was informative and helpful (pp. 128–31). Throughout the book he cites a number of other key studies related to perception and learnability, which helps to make this little volume a useful sourcebook for readers interested in delving deeper into the topics Jackendoff discusses. A number of these studies are important precisely because they show the limitations of formal, autonomous syntax and the need for taking into account specific semantic information (p. 13).

Jackendoff correctly rejects the commonly made distinction between dictionary meaning and encyclopedic meaning (p. 110). At this point, however, he should have cited the published landmark article on the subject written by John Haiman (Haiman 1980:329–57). To the best of this reviewer's knowledge, Haiman's paper is the one that actually propelled this issue into the fore of semantic theory and it has

been extensively elaborated on in print by Langacker (cf. Langacker 1982:44; 1987:154–58; 1990b).

Jackendoff properly rejects the idea that truth-functions are an adequate basis for the semantic analysis of reference and truth (p. 29.) He also correctly links graded judgements to the limitations of semantic models based on mathematical logic, i.e. the notion of "necessary conditions" is not adequate as a single, global principle of linguistic categorization (p. 46). But, of course, his unstated assumption that one can characterize all of human categorization in terms of a single abstract principle is itself highly suspect (cf. Lakoff p. 113).

He further views language as being subjective in nature and links that subjectivity to a universal human mental apparatus (p. 31, 37) (cf. also Langacker 1987; 1990a). At another point, he points out very nicely that human mental processing does much more than just computation and that therefore, extant computer programs are not adequate models of human cognition (p. 12), a point that Lakoff also makes (cf. Lakoff p. 348). Curiously enough, but consistent with his emphasis on a formal approach to cognitive linguistics, he refrains from rejecting outright computer modelling of language phenomena (op. cit.), another point on which we agree (cf. also Lakoff p. 352).

4. The downside of things. Jackendoff properly emphasizes the need for a wide range of entities to be included within conceptual structure to serve as potential foci for the speaker's reference system. For Jackendoff, these entities are realized in the grammar as not only Noun Phrases, but also as Sentences, Verb Phrases, Prepositional Phrases and Adverbial Phrases. His attempt to characterize these categories as ontological (= conceptual) seems to this reviewer to be more of an attempt to read syntax into conceptual structure than anything else. Note, for example, Jackendoff's statement on page 14, that the point of the Grammatical Constraint is to "attempt to minimize the differences" between syntactic structure and semantic structure. Thus, he comments later on (p. 235) that "the embeddings of conceptual structure correspond closely to those in syntactic structure." In my view, such correspondences are artifacts of Jackendoff's theory and these categories are more plausibly construed as symbolic linguistic ones rather than as primitive conceptual ones. Furthermore, rather than try to minimize the difference between syntactic structures and semantic structures, a more fruitful approach would seem to be to try to characterize precisely how both conceptual and semantic structures are

conventionally symbolized by syntactic and morphological structures (cf. also Lakoff p.309).

Jackendoff's penchant for ex-cathedra statements and cursory dismissals of other points of view seriously works against him, undermining the substantial good that is encountered in his approach.

One clear example is his characterization of mental imagery and his dismissal of Kosslyn's findings that mental imagery is not simply an epiphenomenon, but rather is a cognitively real alternate form of representation (Kosslyn 1980:26; 28, 30, 73, 91). Jackendoff brushes aside Kosslyn's work on two accounts. First, he claims that the crucial argument against the cognitive reality of mental images is that "there is no room in the head for a little projection screen and a little person to view it (p. 33)." In addressing this very point, Kosslyn cites specific studies showing that computer programs can model processes of perception without requiring any sort of a homonculus (= a little person to view it) in the process (Kosslyn 1980:19). Second, Jackendoff's above claim also implies that mental images are precisely like pictures. Kosslyn, in contrast, emphasizes that this is a simplistic view that almost nobody doing credible research on mental imagery holds (Kosslyn 1980:17–19). Curiously, Jackendoff's characterization of "the right approach" consists of adding to INFORMATION PROCESSING THEORIES [sic!] the claim that the experience of mental images, like the experience of normal sensation, results from the projection of information being processed by the brain (pp. 33–4). This is not as different from Kosslyn's view as the reader might expect. In addition, Jackendoff's counsel for information processing theories shows that he himself cannot ignore cognitive processing in his own approach to cognitive linguistics (cf. also p. 149).

A second example of Jackendoff's superficial characterizations of the data appears in his discussion of "Generic-Categorization Sentences" (pp. 96–98). The examples that he gives are given in (1)(a–c).

(1)(a) A dog is a reptile. (Generic categorization)
(b) Clark Kent is Superman. (Token-identity)
(c) Max is a dog. (Ordinary categorization)

Jackendoff says that these examples illustrate three different kinds of categorization and notes that a single "be" occurs in all of these sentences. He comments that, in set theoretic notation, one would express the "be" relation in three different ways, as seen in (2)(a–c), where I gloss each mathematical statement with its prose equivalent.

(2)(a) X is included in Y: X ⊑ Y
(b) X is equivalent to Y: X = Y
(c) X is a member of Y: X ∈ Y

Jackendoff claims, for one, that "be included in" is a special case of "be." All is well and good so far. However, he goes on to claim that "the best possible explanation of the linguistic facts" gives "be" an invariant meaning in all the contexts in which it occurs, also gives invariant information that is associated with the reading of the subject and only distinguishes these sentences by the TYPE/TOKEN categorization of the subject (p. 98).

Jackendoff's analysis simply does not jibe with the facts of English usage. On the one hand, there certainly is a single schematic version of BE that subsumes all three of the cases illustrated in (2)(a–c). In Langacker's terms, this version of BE makes essential reference to a schematic process which characterizes the situations that (2)(a–c) refer to (Langacker 1987:256; 1990:92). Nevertheless, there is more to the story.

The three schematic statements of (2)(a–c) are not synonymous and the lack of synonymy is definitely due to more than just the differential TYPE/TOKEN status of the nominals. For one, the complements of BE are distinct in each case, and this is a crucial aspect of the semantic and syntactic structure of these sentences. I take it as an implication of Jackendoff's own principle of EXPRESSIVENESS (= Observational Adequacy) that an adequate linguistic description must account for both the generalization that these three versions of "be" all belong to the category BE as well as account for the differences, precisely because these differences are cognitively based, being grounded in the construal relationship, hardly noticed by Jackendoff, but commented on at length by Langacker (1987; 1990).

Jackendoff's superficial treatment of substantive issues is also seen in his equation of network structures in language with markedness conventions (p. 123). It is true that given a particular linguistic network, some of the members will likely be more highly marked than the other members for a given property. To complicate the picture, it may well be the case that the overall network has distinct subsections in which markedness varies from property to property among the subsections (cf. Ruzka-Ostyn 1989:633, 638). In short, there is certainly some overlap between the network structures in language and the markedness conventions that characterize them.

However, there are other characteristics of networks that markedness theory does not handle, even in the characterization of lexical

information (Ibid.:629, 639; 654). In particular, schematic relations, prototype relations and particular construals are crucial to linguistic categorization. There is actually a whole range of relationships that hold between particular nodes in a network (cf. Lakoff pp. 379, 420). Given Jackendoff's admission that we really do not know what the formal properties of markedness are (p. 154), it is false to conclude that network theories (of all and any sort?) are simply notational variants of markedness theory. Furthermore, the nodes in a network may represent conceptual categories (cf. Casad:1991a, in press) or syntactic patterns (Casad:1991b, to appear). These nodes may also be construed as accessways into fields of knowledge (cf. Langacker 1987:163). There is therefore no ground whatsoever for restricting the fillers of nodes in a linguistically relevant network to unanalyzable lexical items, as Jackendoff appears to do.

5. Conceptual vs. semantic structure. Jackendoff justifiably devotes an entire chapter to the substantive issue of conceptual structure vís à vis semantic structure, titling it "Semantic Structure is Conceptual Structure" (Chapter 6). In the following section, I suggest that Jackendoff's simple equation of the two is misleading and I offer a range of data that support Langacker's alternative view that Conceptual Structure is distinct from Semantic Structure (cf. Langacker 1987: 299). In the light of these data, I propose the adoption of Langacker's construal of the matter.

From a dynamic point of view, cognitive structure is tantamount to our ongoing flow of mental activity, which may be either linguistic or nonlinguistic (Langacker 1988:50). Secondly, semantic structure is strictly linguistic (Langacker 1987:98), whereas conceptual structure consists of thoughts, concepts, perceptions and images (Langacker 1987:88) and may well be universal (Langacker 1982:30; cf. also Lakoff p. 302). A very strong case, moreover, can be made that semantic structure is culture and language specific (for one simple example from contact phenomena, cf. Casad 1988b.127; cf. also Lakoff ch. 18)

The distinction is one of terminology, not one of kind. One can say that semantic structure is a special case of conceptual structure, as Jackendoff himself says on p. 19 (cf. also Langacker 1988b:50). Given this construal, in what specific ways does conceptual structure differ from semantic structure?.

In Langacker's terms, all grammatical units are symbolic structures that pair a meaning with phonological form. In these terms, a

semantic structure is a conceptual structure that serves as the semantic pole of a linguistic expression (Langacker 1987:98). Thus, a given semantic structure is a portion of a greater bipolar, symbolic structure, whereas conceptual structure is unipolar, but multifaceted. At this point, I suggest that Langacker's formulation is much more adequate, i.e., semantic structure "is conventionalized conceptual structure," the form that thoughts must take in order to be expressed linguistically. Given that imagery of various sorts is embodied in semantic structure, Langacker's construal clearly agrees with Kosslyn's observation that cognitive psychologists always knew that mental images were different from literal pictures (1980:27) and that mental images result from cognitive processing, which may be driven either by the sense organs or by the imagination (Ibid.:19).

6. Illustrative Data. To illustrate this, it is clear that different languages code the same conceptual structure by means of different images. In example (6), from Cora and English, the same conceptual structure corresponds to the same entity or situation in objective reality.

(6)(CR) *áhka'iwá'imi* vs. *a long time ago*

The examples in (6) are linked to an even more closely matched concept that is construed in very different ways by Cora and English. Both terms are adverbials, designating a point of time in the distant past, far removed from the time of the speech act in which the terms are employed. The Cora term *áhka'iwá-'imi* is a topographic adverbial phrase consisting of the topographic adverb meaning "off at the side of the hill" and the degree adverb *imi* which means "far away." This particular usage thus represents the extension of a purely spatial term into the temporal domain. On the other hand, the English phrase *a long time ago* reifies the concept of temporal succession, lexicalizing it as an unanalyzable nominal form and modifies it with an adjective form that normally contributes the notion of spatial extension along a single dimension to the nouns it modifies. In this case, the meaning of the adjective accommodates to the nominal, taking on a temporal construal, which is reinforced by the use of the temporal adverb *ago*. This adverbial functions in the same way as the Cora *imi* in that it locates an event in the remote past relative to the time of speaking. Once again, both languages have functionally equivalent conventionalized expressions that designate the same concept in the projected world, but they employ very different means for expressing that concept.

To summarize, both Cora and English have succinct ways for

designating the very same concept, but their respective phrases imply completely distinct foci and networks of cultural knowledge. This potential for differential expression could not occur if it were really true that semantic structure is both universal and is conceptual structure per sé (cf. Lakoff 1987:311).

Structures that designate the same conceptual entity may have different compositional paths. The English terms *father* and *male parent* may designate the same individual in the objective scene, but they encode information in two different ways and are therefore not synonymous (Langacker 1987:293–4;462; 1990b:10). In particular, the gender of the designated relative and the generational relationship are overtly lexicalized by the component morphemes *male* and *parent,* respectively, but are sublexical and are therefore symbolized directly by the word *father.* A restriction to particular domains is another part of their differential meaning. For one, I would more likely use the term *male parent* when discussing penguins than I would when discussing parent-child relations. In a genetics class, however, the term *male parent* would be fully appropriate.

Cora Locative Prefix + Verb Stem constructions illustrate in a striking way the need for invoking the construal relation between the speaker and the situation in which he employs a given utterance in order to account for particular usages (cf. Casad 1988a). They also provide an endless stream of examples that suggest strongly the need to distinguish between conceptual structure per sé and its conventionalization as semantic structure. The Cora examples in (7)(a,b) show a pair of responses a Cora speaker might give if asked how to describe a well-lit up house at night.

(7)(a) u-wá-n^{y}eeri-'i
inside-EXT-illuminate-STAT
'It is all lit-up inside the house'

(b) w-ii-rá-n^{y}eeri-'i
inside-toward-face-illuminate-STAT
out
'It is all lit-up in front of the doorway from light coming this way from inside the house.'

These sentences represent very different images of a lit-up house as being viewed at night. The speaker's vantagepoint is crucial to an adequate explanation of these data. In both cases, the speaker is viewing the house from an external viewpoint, but both the vantagepoint and the scope of his field of vision differ. Thus, in (7a), the speaker is either close enough to the door that he can see a substantial part of the

interior and infer that the illumination extends throughout that interior area or the windows and doorways are numerous and expansive enough for him to reasonably draw that inference. In (7b), the speaker is protypically looking straight through the doorway and has within his field of vision an illuminated area that is partly inside the house and partly outside of it so that he/she perceives a natural directionality of the illumination toward his/her own position. To summarize, an explicit characterization of a conceptual scene and its components is needed here in order to give a descriptively adequate characterization of these data. This characterization must also note the differing degrees of subjectivity or objectivity with which the speaker presents the scene (cf. Langacker 1990a, 1990b:12).

The construal relation also allows speakers to handle figurative language easily and coherently. Often salient similarities will evoke immediate understanding. For example, a *walnut* is hard-shelled and round. We conventionally call it a *nut;* for some of us, the walnut represents the prototypical member of the class that also includes cashew nuts, coconuts, pecans, brazil nuts and peanuts. (For others of us, however, the peanut is the prototypical one.) Common in industrial societies is a small piece of metal with a threaded hole in its middle that is approximately equidimensional. It usually has a hexagonal cross-section, sometimes a square shaped one. The threads in the hole in its middle allow it to be attached by turning it on to a metal shaft with a threaded end, called a *bolt,* whereas the small piece of metal that attaches to it is called, in English, a *nut.* The approximate equidimensional shape of the industrial nut, as well as its obvious hardness and hollowness, allows the speaker to apply the term nut, meaning a hard-shelled edible fruit, to the metal object. The speaker's knowledge of the distinct functions and non-shared characteristics of the two entities allows him to keep them apart conceptually.

7. Jackendoff's "conceptual structures." On an intuitive basis (cf. p. 103), I find Jackendoff's formal representations of "conceptual structures' to be unconvincing. Basically, these representations frequently overlook my own intuitions about what is relevant for an adequate description of the data, i.e. what is salient to the representation vís à vis what is backgrounded to one degree or another. In order to capture generalizations according to his Grammatical Constraint, Jackendoff posits classes of events that are defined according to certain semantic functions. Thus, one class of events is a class GO (p. 172). Jackendoff's use of functor labels that have the same orthographic

content as conventionalized lexical items in English amounts to obfuscation rather than elucudation. Unfortunately, Jackendoff employs similar strategies in several other analyses in this book (cf. also his use of "picture" in section 11.4).

The particular final pair of Jackendoff's examples that I discuss are *Beth received the doll* and *Beth lost the doll,* whose putative conceptual structures are given in (8)(a and b).

(8)(a) $[_{Event}GO_{Poss}([DOLL],[_{Path}TO_{Poss}([BETH])])]$

(b) $[_{Event}GO_{Poss}([DOLL],[_{Path}FROM_{Poss}([BETH])])]$

An examination of the conceptual structures that Jackendoff associates with each shows that formally the only difference between *receive* and *lose* is reputed to be the directionality of the path associated with the function GO (cf. p. 192). In other words, Jackendoff's notation characterizes *Beth received the doll* as being the semantic inverse of *Beth lost the doll.* This would not be so bad if the meaning of *Beth lost the doll* could be fully characterized as *Now you see it; now you don't* (Doris Bartholomew, personal communication). Obviously, however, there is a lot more to the story.

For one, the two sentences differ in the degree of intentionality associated with the subject role. The subject of *receive* does so intentionally and (usually) consciously, whereas the subject of *lose* prototypically does so unintentionally. Note in passing that Jackendoff classes both sentences as noncausative (p. 193), but incorrectly says that the subject exercises no control in either sentence. However, in at least one reading of *receive,* the subject of *receive* obviously does exercise some kind of control, one that can be paraphrased as "to take possession of." In other words, in many of its usages, the conceptual scene associated with 'X receives Y' also includes the implicit situation that Z gives or offers to give Y to X (cf. also Langacker 1990b: 226–8). This accounts for certain other usages of *receive,* such as in *Beth received a generous inheritance.* In this case, the control is exercised by an unspecified agent who graciously included Beth in the benefits of the agent's estate. A similar example is seen in the sentence *We mailed a doll to Beth, but she never received it.* In this case, the control is attributed to the subject of the initial clause which sets the stage for the potential for Beth to receive something (cf. Talmy 1985: 320 for a similar analysis of certain usages of English modals).

8. Lakoff. Lakoff's book continues to develop the point of view presented in Lakoff and Johnson (1980), presenting the reader with more than twice the content that Jackendoff's book contains (614

pages versus 283) and providing a stark contrast to Jackendoff in its overall methodology and perspective.

Lakoff divides his book into three parts, the first of which, titled *Categories and Cognitive Models,* contains ten chapters and covers topics such as the importance of categorization to an explanatory theory of knowledge, the roles of Wittgenstein and Rosch in establishing the validity of prototypes in philosophy and psychology and a summary of prototype effects that one can detect in language structures. Subsequent chapters detail the specifics about idelized cognitive models (Chapter 4), metonymic models (Chapter 5), radial categories (Chapter 6) and the notions of features, stereotypes and defaults (Chapter 7). The rest of Part I fills in additional details about cognitive models, discusses the views of some scholars who defend the classical view of prototype theory (Chapter 9) and concludes with a summary of it all.

In Part II, Lakoff examines a variety of the philosophical implications of his view of cognitive grammar. He gives an overview of the objectivist paradigm (Chapter 11) and critiques both the metaphysical view and the cognitive view that afficionados of this paradigm hold (Chapters 12 and 13). He follows this with two more chapters that relate to the strong preference of objectivists for formal explanations (Chapters 14 and 15). In Chapter 15, Lakoff summarizes Putnam's argument that the objectivist paradigm is inconsistent—the basic idea being that formal objects are meaningless in and of themselves and that "meaningless structures cannot give rise to meaningful symbols (p. 252)." Chapter 16 lays the groundwork for Lakoff's own view by discussing an alternative perspective that "accords real status to the world and the way that we function in it (p. 266)." Lakoff calls this alternative perspective "internal realism," which he contrasts with the "God's eye view of reality" of the objectivist paradigm. The second half of this chapter outlines Lakoff's approach, which he calls "the experientialist strategy (p. 266ff.)." Lakoff then presents in Chapter 17 an introduction to his version of cognitive semantics. Most of the rest of Part II consists of chapters treating Benjamin Lee Whorf and his well-known idea of linguistic relativity (Chapter 18), the view that the human mind can be modelled as a machine (Chapter 19) and the contention that mathematics itself must be viewed as cognitive activity (Chapter 20)." In short, Lakoff holds that "reason is not transcendental but grows out of bodily experience (p. 369)." Lakoff concludes Part II with a brief overview of Parts I and II (Chapter 21).

Part III presents a summary of three cognitive studies that focus on

distinct domains of language behavior. Case Study One is that made of the concept *anger* by Zoltán Kövecses. Case Study Two is that done by Claudia Brugman on the English preposition over and Case Study Three presents Lakoff's own study of the English *There-construction.* This last study is designed to demonstrate that the following three assumptions are necessary in order to give an adequately explanatory account of syntactic constructions:

(a) Grammatical constructions are symbolic in nature, representing pairings of meaning and form. This view is an idea that can be traced all the way back through Augustine to Aristotle and the first book of Parmenides (Pierre Swiggers, personal communication). The notion that the description of a language must include an account of the form-meaning correlation predates the Katz and Fodor semantic theory (cf. Jackendoff p. 8) considerably.

(b) Cognitive models are needed in order to describe the structural aspects of meaning.

(c) Grammatical constructions are organized into radial categories in which one member of the category may be central and all the others may be related to the central one in motivated, but non-predictable ways (p. 378).

The difference between Lakoff's approach and that of Jackendoff is succinctly summed up by Lakoff's title *Women, Fire and Dangerous Things,* which reflects a categorization relevant to the Dyirbal language of Australia, one whose membership, although unpredictable, is nonetheless determined by regular and principled judgements based on cultural experience (p. 5, 95). Whereas Jackendoff's approach is heavily oriented to describing language in terms of rules, Lakoff's approach is characterized by a focus on categorization and mental models. *Women, Fire and Dangerous Things* is a sweeping and comprehensive proposal for the direction that Lakoff feels that cognitive linguistics should go. Rather than throw out all of the old questions, Lakoff proposes new answers for them (pp. ix; 59; 265).

Lakoff devotes a considerable part of his time to placing the whole of cognitive linguistics in context, showing the common ground on which both the objectivist position and the experimentalist position stand. Lakoff labels the common ground BASIC REALISM and characterizes it in the following terms. Both the world external to human beings and human existence itself has a real existence. Within this existential sphere, there is some kind of a link between a multitude of varieties of reality and human conceptual systems. Whatever truth is, it is more than a matter of mere internal coherence to a given situation

or system. We need to maintain some kind of a commitment to the stability of knowlege in the external world and we also reject the idea that all possible alternatives are equally valid, i.e. life in general is not random. (p. 158)

Starting from that basis, Lakoff goes on to describe the OBJECTIVIST PARADIGM in terms of the following characteristics:(pp. 157–184). The structure of reality can be framed in terms of set-theoretical models (p. 159), and thought itself consists of the manipulation of abstract symbols (ibid.). This structure is independent of any human understanding, consisting entirely of entities, fixed properties and relations that hold at any given moment (ibid.:160). Entities are characterized by both essential properties and accidental ones. The essential ones are necessary in order for the human cognizer to categorize a particular entity in any given way (ibid.:161). Categories are construed in the classic sense, i.e. all human conceptual categories consist of groups of entities, each of which is characterized by some property that all the class members hold in common. Furthermore, the categories of both mind and language mirror the world as well as project onto it (p. 208). One other characteristic of objectivist semantics is also worth mentioning. Objectivist semantics assumes that there is only a single way to correctly refer to entities in formal terms (pp. 201,213). In other words, meaning is based on truth (pp. 167,171,203,232) and there is no logical room for contradictory models (pp. 201–3). A rigid distinction between literal and figurative language is implied by this truth-based view of meaning (p. 172) and is accompanied by the lack of a substantive role for metaphor and metonymy (op. cit.).

It is important to note that this characterization of the objectivist paradigm is not a strawman; Lakoff lists himself among the practitioners of objectivist semantics in the late 1960's and early 1970's (p. 217), noting a number of crucial insights gained after he and several other scholars melded model theory to that approach (op. cit.).

Lakoff's specific set of proposals constitute what he labels as the EXPERIENTIALIST ALTERNATIVE. To begin, Lakoff holds that direct and indirect experience are the mechanisms by which concepts are embodied in meaning (p. 292). Thus, meaning, in experientialist terms, is much more than the mere manipulation of abstract symbols (p. 252). Human experience motivates human concepts which, in turn, are the basis of human language (p. 206–7). The structure of human categories consists of much more than just entities and sets. In particular, categorial structure includes at least radial organization, metaphorical structures, metonymical structures and graded structures. All

of these involve basic cognitive abilities to make comparisons and register similarities and differences (Langacker 1987:105) and jointly produce prototype effects (p. 212). In short, the central issue in linguistic endeavor is meaning and the central question is to explain just how linguistic structures and the concepts that they express are meaningful (pp. 212,228,266,583; Langacker 1987:12,35,156).

The heart of Lakoff's book lies in the thesis that IDEALIZED COGNITIVE MODELS organize all of human knowledge, and, in doing so, category structures and prototype effects arise as by-products (pp. 45, 68). These structures are complex conceptual wholes, i.e gestalts, that employ propositional structures (such as Fillmore's frames), image-schematic structures (cf. Langacker 1987) and metaphoric and metonymic mappings in order to structure knowledge within mental spaces (cf. Fauconnier 1990:154–5).

Regarding grammatical structure, Lakoff notes that many important insights into language structure were gained within the framework of objectivist semantics. These include predicate-argument structure, variable scope, coreference phenomena, variable binding on quantifiers, logical operators, transparency vs. opacity of reference and propositional functions (p. 217). He goes on to assert that any theoretical approach that pretends to be adequate must in some form preserve all these insights (op. cit.). In Lakoff's model, grammatical constructions are ICMs in which the meanings themselves are ICMs that are paired with syntactic aspects of the constructions, the pairings resulting in the statement of many kinds of generalizations that govern the relationship between syntax and semantics (p. 291). At this point, Lakoff is in complete agreement with Langacker, who holds that grammatical structures provide the means for symbolizing complex notions and serve to structure conceptualizations in particular and conventionalized ways (p. 230; Langacker 1987:294).

The different philosophies that Jackendoff and Lakoff employ lead them to widely divergent interpretations of the same data. Thus Jackendoff characterizes the causative notion, along with [BECOME] and [NOT] as "likely" semantically primitive (p. 113) and characterizes it formally as a binary function [CAUSE] (p. 175). I understand by this, that for Jackendoff, the notion CAUSATIVE has no internal structure and no variants from context to context. Lakoff, on the other hand, treats the concept of causation as "one of the most fundamental of human concepts" (p. 55) and goes on to note that CAUSATION is reflected in a multiplicity of ways in the grammars of most languages (p. 54). Studies of the causal meanings of English prepositions by

Radden (1985), of German causatives by King (1988), of Nahuatl causatives and applicatives by Tuggy (1981, 1988) and of "Force Dynamics" by Talmy (1985:308ff,) all underscore Lakoff's point, as does the collection of papers in Shibatani (1976).

Based on his view of metaphor as only serving artistic or picturesque effect, Jackendoff claims that the idea that systems of metaphor underlie the theory of thematic relations "debases the theory of thematic relations" (p. 209). However, he does allow for the possibility of an abstract characterization of thematic relations that allows them to be applied to all fields of the grammar (p. 210). A careful examination of metaphor, however, shows quite a range of functions (cf. Paprotté and Dirven, eds. 1985, for example). In contrast, Lakoff places metaphor fully within the resources of human imagination and experience, treating it as a crucial factor in human mental and linguistic categorization (p. 8), as well as recognizing its status in determining the meanings of grammatical constructions (pp. 295, 510). Furthermore, for Lakoff, Jackendoff's abstract representation is a kind of image schema (p. 283).

Jackendoff opts for a single level of conceptual structure at which the input from all the different sensory mechanisms is organized and equates it with semantic structure, which has a quasi-algebraic form. The resultant pairings of meanings with syntactic structures are closely matched in their patterns of embeddings and are subject to the Cognitive Constraint, which functions to lessen the difference between syntax and semantics.

Lakoff views the the matter in a very different light. There is a rich level of preconceptually structured bodily experience which is linked to and gives rise to conceptual structure (p. 267). This preconceptual structure is the basis for our understanding of basic-level concepts and corresponds to them (p. 270), being grounded in our experience independent of concept formation and prior to it (p. 271). Lakoff cites the CONTAINER schema as one example of a preconceptual kinesthetic image schema, noting that ingesting, excreting and breathing are practically our most basic activities (p. 271). In more general terms, image schemas are understood in terms of bodily functioning, e.g. our canonical standing position determines for us the prototypical senses of *front* vs. *back* and *up* vs. *down* (cf. Traugott 1978; Clark and Clark 1978). They, in turn, are the devices that structure both cognitive models and language patterns (p. 291, 293, 303).

Rather than confine conceptual structure to a single, quasi-algebraic notation as Jackendoff, does, Lakoff presents a very rich

view of conceptual structure. For example, the contentfulness of the concept anger includes an ontology that consists of our knowledge about the entities that are involved in anger situations and the aspects of the particular person that are effected. Other elements of the ontology include the notion of giving offense and taking retribution, the existence and structure of intensity scales with their expansiveness and endpoints, the particular predicates that are conventionally used to describe anger and our knowledge of other events such as physiological reactions, angry behaviors and immediate causes (p. 400).

The prototypical anger scenario involves a victim who may lose control of himself, an agent who is the cause of the offense that affects the victim by occasioning in him physiological and emotional states grounded in the victim's perceptions of a basis for retribution. This may very well lead to the victim's directing retributive behavoir toward a target, who is prototypically the offender. Kövecses actually spells out five stages in the prototypical scenario (Kövecses, 1986:32), but for the sake of brevity, I do not mention them here. Beyond the prototypical scenario, Kövecses details a number of nonprototypical variants.

The analysis of ANGER shows that there is no single cognitive model that unifies all of the relevant data, but rather there is a collection of cognitive models that relate in various ways to the prototypical cognitive model in the center (p.405; Kövecses 1986:36). Kövecses and Lakoff find that metaphorical structures permeate this conceptual system and are of two kinds, BASIC LEVEL metaphors and CONSTITUTIVE metaphors. For Lakoff, the comprehension of anger and the inferences we draw about it are motivated by the basic-level metaphors. Most of the information contained in the ontology of anger is provided by the constitutive metaphors (p. 406)

On the other hand, there are some conceptual difficulties with a few of Lakoff's formulations. Probably the most important of these is his "spatialization of form hypothesis," which, as Langacker so cogently remarks, cannot be accepted in its present formulation. Langacker's point is that Lakoff's formulation would make language itself the object of conceptualization rather than characterize language as the system for allowing the expression of conceptualizations (Langacker 1988:391, personal communication).

In summary, for Lakoff, conceptual structure includes a number of kinds of representations: radial category structures- having a prototypical center with motivated, but nonpredictable extensions (p. 84), image schemas- underspecified mental models that structure our con-

cepts about space (p. 283), metonymic models- the use of a salient aspect of one entity to designate a salient part of or the entirety of another entity (p. 77, 84–5.), metaphoric models- the mappings of relations from one domain to another (p 110, 272ff), e.g. from geographical space to time, and symbolic models- all the kinds of models of linguistic form that pair with particular cognitive models (p. 467).

On a more superficial side, the index of Lakoff 1987 is much more complete and useful than that of Jackendoff 1983. Editorialwise, however, Jackendoff 1983 is better done than Lakoff 1987. The following are a few typos from the latter work: On p. 194, line 31, for: If, of course, read: It, of course,; on p. 309, line 14, for: succeed for fail, read: succeed or fail.; on p. 320, line 10, for: msut, read:; must; on p. 342, line 28, for: inside then computer, read: inside the computer

9. Conclusion. Jackendoff's book is a stimulating and important attempt to develop formal linguistics into a viable explanatory version of cognitive linguistics. Jackendoff has, however, met with mixed success. On the one hand, he has marshalled impressive evidence that shows the need to go far beyond the limited resources of mathematical logic for modelling semantics. On the other hand, he has not gone far enough in distancing himself from the objectivist paradigm that Lakoff writes about in Chapters 11–14 of *Fire, Women and Dangerous things*.

Jackendoff claims to have succeeded in integrating linguistic theory and methodology fully with that of cognitive psychology (p. 211). However, his case is not convincing precisely because none of his formalisms seriously employ the psychological constructs that he talks about early in the book (pp. 1–47).

In particular, Jackendoff's analyses are overly formalized in the direction of Predicate-Argument logic and overlook completely the particular figure-ground relationships that organize the relevant conceptual situations that these verbs symbolize. Beyond his failure to give descriptively adequate analyses of the Engliush data, Jackendoff fails to really exploit the cognitive factors he so nicely describes at various places in the book. Primary among these are, as I have previously mentioned, the well-known Figure-Ground relationships, constructs used widely in psychological testing. Additional very important ones include the Construal Relation between the speaker and the situation he is describing, as well as the role that conventionalization plays in determining the lexicon, morphology and syntax of a language. Jackendoff also does not discuss the role of non-propositional conceptual structures (cf. p. 35) or the mapping functions that relate

them across conceptual domains, nor does he come to grips with the roles of prototypical and base-level concepts in human categorization.

By concluding that since prototypes do not handle all the data, they therefore have no significant role to play in semantics (p. ix), Jackendoff falls into the Exclusionary fallacy that Langacker discusses, i.e one analysis necessarily precludes another (Langacker 1987:28). Notice that just because not all categories are classical ones does not require us to conclude that no categories are organized in classical terms, nor does it require us to conclude that classical categories are never relevant to human cognitive processing (cf Lakoff p.8, 160; Geeraerts 1989:596).

On balance, Lakoff's approach seems much more realistic to me than Jackendoff's and considerably less artefactual. Lakoff's book is so comprehensive that it cannot be summarized here, but its comprehensiveness is one characteristic that makes it so crucial to the libarary of the cognitive scientist, where Jackendoff's book should also be. As is true for Jackendoff's book, Lakoff's book is also a treasure trove of the literature which potentially will fuel research in cognitve linguistics for a long time to come. Among the corners of Lakoff's book that I have not mentioned is an insightful and helpful discussion of the proper role of mathematical logic. Lakoff also devotes a chapter to the question of linguistic relativity and gives a touching tribute to the American scholar who anticipated much of what Cognitive Grammar is all about: Benjamin Lee Whorf.

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ENDNOTE

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Reviews

The Great Tzotzil Dictionary of Santo Domingo Zinacantán with grammatical analysis and historical commentary, Robert M. Laughlin with John B. Haviland Smithsonian Contributions to Anthropology, 31; Washington, D.C.: Smithsonian Institution Press, 1988. Vol. I: Tzotsil-English xii + 356 pp.; Vol. II: English-Tzotzil, 297pp.; Vol. III, Spanish-Tzotzil, 464 pp.

Reviewed by JUDITH MAXWELL

This work, a dictionary in three volumes with an extensive introductory exegesis, is a masterpiece of linguistic and historic reconstruction. The dictionary itself is presented in three sections: first, Tzotzil-English second, English-Tzotzil; finally, Spanish-Tzotzil. The latter section retains much of the format of the original, but the entire work has benefitted from Laughlin's painstaking reconstruction of the copyist's forms to probable Tzotzil, as well extensive added commentary, which along with the added grammatical codes make the entries morphological and syntactic composition transparent. This dictionary coupled with Laughlin's (1975) Great Tzotzil Dictionary of San Lorenzo Zinacantán document bracket 400 years of the Tzotzil langauge, not only providing a wealth of strictly lexical information, but insights into both cultural phases, and the processes of language and culture change. The Colonial dictionary has 11,055 entries, of which the roots of 903 are identical with modern forms, 46 have shifted in form or function, and 169 were not documented in the 1975 lexicon.

Some of the lexical shifts noted mirror cultural changes in "predictable" fashion. The terms for warriors of different classes, ch'ilom, j'antzil-ti', and jyabutil, have disappeared, as have their referents.

Testimony to the effectiveness of the Church in its proselytizing mission, winik, which in Colonial Tzotzil meant 'person', has narrowed its scope to 'man' and krixchano from Spanish cristiano 'lit. Christian' has taken over the broader, gender neutral reading. Other changes document semantic drift with less clear cultural congenitors: natz'il has shifted from 'bracelet' to 'necklace'.

The entire document can be read, to the extent that dictionaries are literature, as an ethnography. The example sentences give telling, at times chilling, insights into Colonial society. "We whipped him but he did not profit by it" (p. 1, Vol. 1); or in the entry for kupul -ik'tay 'endure' (p. 225, Vol 1) "This is to hold one's breath, as when they close their mouth and clench their teeth from pain. And so after they have told the person . . . "Hold your breath for the pain, endure the pain!" they often add, "Bite your lips, clench your teeth!" Here Laughlin notes that the modern phrase means simply 'to hold one's breath". Less violent examples also abound the enrich the text: liktzanabil 'price tag (sign that purchase price has been agreed upon). And this term may be applied to the ring or necklace that the groom gives to his bride to signify their agreement or betrothal . . . ' (p. 245, Vol. 1). Tzeb 'girl, maiden. They call all women tzeb 'girl, maiden' who have not given birth even though they have known many men or have been married several times' (p. 172, Vol. 1).

In the introduction to the dictionary Laughlin provides a meticulous history of the manuscript on which this reconstruction is based, and its probable genesis. Despite a tour de force in archival research, Laughlin finally must dub the original author of the dictionary "Z". Laughlin did find that "Z" was a Dominican friar, a skilled linguist. "Z" provides literal translations of the Tzotzil terms, along with etymologies, while teasing out the exact contextual meaning of the forms as they appear in discourse. He gives partial conjugations of all the verbs, listing forms in the first and second person singular (even when third person singular is the only normal usage). "Z" lists derived forms under the principal verbal entries. Moreover, "Z" showed concern for the sensitivity to Tzotzil norms of usage, recognizing as well distinct registers and styles of speaking, and also acknowledging dialectal variation. Frequency of usage of a form and its distribution by age group and by gender of the speaker is also noted, making "Z" one of the earliest sociolinguists in the New World.

The original work did not come down to us, via Laughlin, however; and the copyist appears not to have commanded Tzotzil, or Latin, or Colonial Spanish. Laughlin lists the major pitfalls as the copyist's

tendency to interchange i and e, o and a or u, l and t or h, u and n, and z and g and q. Laughlin's command of contemporary Tzotzil, his willingness to consult liberally with fellow linguists and language consultants, and his great care in examining alternative possibilities, allowed him to ascertain canonical forms for the great bulk of the work, leaving an unanalyzable set of only 100 "problem words". These words he lists with their glosses at the end of the Tzotzil-English section.

Laughlin has enhanced the document he worked from, standardizing the orthography, providing cross-references, and adding the third of the tri-lingual dimensions. While leaving most of the colonial practical orthography intact, Laughlin has inserted glottal stops as an aid to Modern Tzotzil scholars. The grammatical information provided follows the format of the Modern (1975) Great Tzotzil Dictionary. Against Haviland's able grammatical backdrop, the dictionary grammatical categories are lucid and useful, with the possible exception of the distinction noted between animate and inanimate possession types, which seems to cross-cut diagnostic groupings. The thesaurus provided serves as a window to the cultural inventory and the "unique beginners" of ethno-taxonomic semantic domains. The Spanish-Tzotzil section, not only allows Tzotzil look up from that source, but also explicates Colonial Spanish lexicon in the New World context.

Haviland contributes to the intelligibility and usefulness of the dictionary with a concise and refreshingly spritely grammatical sketch of Tzotzil. This elucidates the categories used to classify the entries and aids parsing of the rich example sentences. The sketch manages to introduce neophytes to Mayan grammatical categories, to explain the special notations of this work, to note possible cases of linguisitic change, and to point out cases of "Z" analytic errors. One of the major linguistic differences Haviland finds between the Colonial and Modern usages is that the Colonial Tzotzil uses no Spanish conjuctions. This contrasts with the free Colonial borrowing of other Spanish terms and with the Modern practice of nearly exclusive use of Spanish in this grammatical role. Haviland discovered several other syntactic structures of Colonial Tzotzil which contrast with modern usage. These include: (1) use of absolutive affixes with nominals in prepositional phrases, which allows the phrases to stand as free predications; (2) second person dummy subjects appear with impersonal meaning; (3) the aspect marker //−// was "neutral" and appeared where incompletive //ta−// would today; (4) directional verbs were fully inflected, not simply verbal complements; (5) affective verbs could occur as bare

uninflected stems, (though Haviland suggests that this might be an error). This wealth of material, the richness of the sentence inventory provides a possible check on historical linguistic methodology, not only in the more traditional field of lexicon, but also in morphology and syntax.

The Great Tzotzil Dictionary of Santo Domingo Zinacantán is an excellent reference work, a fine resource for linguists, ethnographers, historians, and speakers of modern Mayan languages endeavoring to enhance their current lexical inventories using indigenous sources. Laughlin once again demonstrates his considerable skill in linguistics and knowledge of Tzotzil. Both he and Haviland manage in their exposition and commentary to be at once instructive, interesting, and readable, a laudable and regrettably rare academic achievement.

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GERHARD DOERFER, Grundwort und Sprachmischung: Eine Untersuchung an Hand von Körperteilbezeichnungen (Münchener Ostasiatische Studien, Band 47). Stuttgart: Franz Steiner Verlag 1988. VIII, 313 pp.

Reviewed by EUGENE HELIMSKY

In the first part of his new book, Gerhard Doerfer proves what has always been more or less evident to anybody interested in lexicology: abundant empirical data and calculations bring him to the conclusion that while all terms for body parts are basic words, only some of them really belong to the core of the vocabulary and are relatively stable in a language, and many others remain at the lexical periphery and are easily replaced or borrowed. The opposition 'basic words' : 'cultural words' simplifies and partly distorts the real picture; within the first category at least two groups, 'nuclear basic words' (= Kerngrundwörter, KGW) and 'marginal basic words' (= Randgrundwörter, RGW), are to be distinguished (with a thin intermediate layer in between: Zwischengliedwörter, ZGW). In the second part of the book, Doerfer, renowned both as a leading expert on Altaic languages and as an ardent Anti-Altaicist, exploits this conclusion to support his claim

that the lexical parallels between the Turkic, Mongolic and Tungusic languages are not of genetic origin.

Moving with the author from one region of the world to another and from one aspect of the problem under scrutiny to another, the reader finds out that:

In the Turkic dialects of Iran, which represent several languages (Khalaj, Khorasan-Turkic, Azerbaijanian, Sonqorī) but are all under strong Persian influence (so that they must be qualified as mixed languages), there are words for body parts which are genuinely Turkic in all 30 examined dialects (e.g., the word for 'eye', Turk. ***köz**), and other elements of the anatomical terminology which are sometimes, often, or even always represented by Persian loanwords (e.g., the word for 'eyelash', Pers. **muža** - despite the fact that the thing itself and the word for it, Turk. ***kirpik,** were well known to the Turks long before they came into contact with their present neighbors).

A similar picture can be observed in other situations of mass borrowing: into North Tajik from Uzbek; into Tat (an Iranian language in the Caucasus) from Azerbaijanian; into Bukhara Arabic from Tajik and Uzbek; into Cheremis from Chuvash and Tatar; into Sayan Samoyedic (although I believe that it would be more reasonable to treat separately the data from two distantly related Sayan Samoyedic languages, Kamassian and Mator) from Siberian Turkic; into Yakut from Mongolic; into Solon (a Tungusic language in Manchuria) from Daghur Mongolian; into Daghur Mongolian from Solon and Manchu; into Manchu from Mongolic; into Romany (Gypsy); into Albanian; into Brahui; into Nubian from Arabic.

On the basis of their retainability/liability to borrowing in mixed languages, only 11 items can be qualified as KGW: 'eye', 'hand', 'head', 'foot', 'ear', 'nose', 'mouth', 'heart', 'hair', 'tongue', 'tooth'. After some minor modifications made throughout the study, 5 more are estimated by Doerfer as ZGW ('finger', 'lip', 'heard', 'knee', 'neck'), and the rest of the meanings go into the group of RGW (including 'face', 'back', 'shoulder', 'liver', 'body', 'cunnus', 'rib', 'penis', 'lung', 'brain' and many others; perhaps also 'belly', 'leg', 'cheek', 'elbow', 'breast' and others that were not taken into consideration in the book).

The list of 11 KGW hardly raises any doubts. Actually, the figures on p. 53, which indicate the frequencies of borrowing for the corresponding items, can be even "improved"—that is, reduced,—as long as:

(a) Alb. **krýe** 'head', which Doerfer takes as a borrowing from

Lat. **cerebrum** (the only loanword for 'head' in his materials!), probably goes back to IE ***k̂er-** etc. (~Gk. **krāníon, kárā**), see Huld 1984: 83; Gamkrelidze and Ivanov 1984: 113.

(b) Alb. **këmbë** 'foot,leg' is clearly connected with Vulgar Lat. **camba** 'leg', but the direction of borrowing is not clear (Huld 1984: 80).

(c) Both words for 'hair' in Sayan Samoyedic, ***ęptə̂** 'hair (on head); and ***tə̂r** 'hair (on body)', should be safely viewed as inherited from Proto-Samoyedic (Janhunen 1977: 21, 149); the second of these words may ultimately be a Mongolic loan (Joki 1952:312–3), but then the borrowing occurred long before Kamassian and Mator became exposed to massive Altaic influence.

The following several chapters are devoted to establishing additional distinctions between KGW and RGW (with ZGW occupying in many cases an intermediate position). From the semantic viewpoint, KGW denote easily perceivable objects with important and obvious physical functions; they are neither too specific (as 'heel' or 'canine tooth') nor too general (as 'body' or 'muscle'); the list of KGW does not include the (potentially) obscene terms. On the whole, KGW occur more frequently (in texts, in idiomatic units, in short vocabularies compiled by field linguists, etc.). They make longer entries in dictionaries. They are learned very early by infants—in fact, earlier than the particles and other grammatical words with the highest absolute frequency, and this gives Doerfer occasion for an interesting discussion of the relationship between pragmatic values, "disponibilities", and frequencies of words. They are evaluated or experimentally singled out as psychologically more relevant (some of the corresponding psycholinguistic tests look, however, a bit amateurish). Their meanings are relatively stable, while those of RGW are labile and often interchangeable ('eyelash' > < 'eyebrow', 'chin' > < 'jaw'). In field studies KGW are produced by informants (as reactions to questions) with shorter delay and with fewer mistakes. Morphologically they are usually simple and opaque. They are less variable within a language family (e.g., C.D. Buck's dictionary of IE synonyms lists, on the average, 6.9 etymological types for the 11 KGW and 11.75 types for 12 RGW). Surely, no one of these assertions contradicts the intuition of a linguist (even if sometimes Doerfer fails to distinguish between the relevance of a notion, which must be universal at least within a certain cultural area, and of a word for this notion, which may be specific for an individual language).

The statistical evidence on the distinctions between KGW and RGW, taken from different angles, is basically the same, so that the numerous tables in the book mostly repeat each other and seem somewhat boring. All calculable results are then summarized in the tables on pp. 135–44.

A special section is devoted to the glottochronological method. Repeating much of the long-known criticism concerning this method (directed, however, against the original model by M. Swadesh rather than against its modern improvements—cf. Embleton 1986, Starostin 1989) and stressing, in particular, that the method takes the 'basic vocabulary' as a single whole, without distinguishing between KGW and RGW[1], Doerfer claims that "die Glottochronologie nicht durchfürbar ist" (p. 153). No less severe is his attitude towards the theory of the Nostratic distant relationship, which attitude I had an earlier opportunity to analyse (see Helimskij, 1986:247–53—a response to Doerfer 1973).

The biggest section of the book is devoted to "A special problem: The Altaic question" (pp. 153–283). Doerfer's main idea is that the Altaic lexical parallels are due to borrowing, not to genetic affinity, even in cases where actually a case of borrowing cannot be proven. Cf. the following typical remark on pp. 161–2: "Natürlich erhebt sich folgende Frage: Wenn es ca. 80 nachweislich entlehnte KTB [= Körperteilbezeichnungen] im Tungusischen gibt, warum sollen dann die ca. angeblich verwandten KTB nicht ebenfalls entlehnt sein, nur eben einer älteren Lehnschicht angehören?". In order not to leave this question in a state of a mere rhetoric allegation[2], Doerfer states his intention to approach it in the light of what has been said earlier on the relationship between KGW and RGW.

It is true that there are many Altaic lexical parallels from the domain of RGW. It is also true that for many such parallels the borrowing can be proven or strongly suspected (even if they were erroneously treated as genetic cognates in Poppe 1960). The treatment of the corresponding etymologies is undoubtedly one of the most useful sections of the book under review.

If etymologically related words were present only among RGW and completely absent among KGW, the situation would seriously contradict what we expect to find in a genetic unity of languages and what is actually observed in Indo-European, Uralic, Bantu or Austronesian (pp. 273–81)[3], and would therefore confirm the opinion of Doerfer on the resolute decision of the participants of the Altaic panel

at Stanford in 1987, who "found Proto-Altaic, at best, a premature hypothesis and a pragmatically poor foundation on which to build a sustained research program" (Unger 1990: 479).

The crux of the matter is, however, that—contrary to what Doerfer believes—it is possible to trace the Proto-Altaic origin of 10 (out of 11) KGW in his list. This result has been demonstrated in a recent study by Sergei Starostin. While Starostin's book, published in 1991, certainly could not be taken into consideration by Doerfer[4], the majority of the etymologies presented there are by no means new[5] (as distinct from the Proto-Altaic reconstructions suggested by Starostin and marking a considerable step forward—or maybe even the decisive breakthrough—in Altaic historical phonology, as well as from the additional Japanese members of these etymologies, which are omitted here).

EYE: Alt. ***ńiā*** > Mong. **ni-dün** 'eye' (the same root in **ni-l-musun** 'tear'), Tung. ***ńiā-sa*** 'eye' (the same root in ***ńiā-ru-*** 'to look'), MidKor. **ńú-n** 'eye', probably preserved also in Turk. **jāš** < ***ńiā-l'*** 'tear' (KW 281; SKE 172; TMS 1, 292; St 30–1). Doerfer disregards (p. 172) the comparison from TMS, citing for Proto-Tungus ***i̯a:-sa*** (in the notation of St: ***iā-sa***), a reconstruction that does not account for Nanai **nasa-l** 'eye'.

HAND: Alt. ***ŋālä*** > Turk. ***äl(ig)*** 'hand', Tung. ***ŋāla*** id. (St 47). Doerfer (pp. 186–7) did not notice the possibility of this new comparison, investigating instead the old erroneous comparison of **ŋāla** with Turk. **qarï** 'arm', Mong. **γar** 'hand, arm'.

HEAD: Alt. ***mal'V*** > Turk. **baš** (< ***bal'(č)***) 'head', MidKor. **mə̀ri** id. (SKE 146; St 31–2). The etymology seems somewhat problematic: both the Turkic and the Korean forms can each go to a great number of different proto-forms, so is it not just chance that the two back-projected beams meet at ***mal'V?*** Doerfer does not take the Korean data into consideration; in connection with Turk. **baš** he mentions (p. 170) Mong. **−balǰi** in **tar-balǰi** 'sparrow hawk; tawny eagle' (*'bald-head'?), which, if the semantic reconstruction is correct, may be a Turkic loanword.

FOOT: Alt. ***pal'kV*** > Tung. ***palga-n*** 'foot', MidKor. **pár** id., probably preserved also in Turk. **bašmaq** < ***bal'mak*** 'footwear' (SKE 184–5; IS 3, 66–70; St 43). It would not be any worse to reconstruct the "main" Proto-Altaic term for 'foot' as ***p'agdV*** > Turk. **adaq** 'foot', Mong. ***fadag*** 'end, extremity', Tung. ***pagdi(−kī)*** 'foot, sole' (Poppe 1960: 52; VEWT 5; St 282); this etymology is discussed also by Doerfer on pp. 187–9 (strangely enough, Mong. **adaγ** is interpreted as a late borrowing from Turkic).

EAR: Alt. ***k'üjlu*** (~***k'ülju***) > Turk. ***kul-kak/*kul-gak*** 'ear',

MidKor. **kúi** id., preserved also in Mong. **qulki** 'earwax' (KW 196; IS Mat. 366; St 52–3). On pp. 172–3, Doerfer mentions the Mong.-Turk. comparison (without considering the Korean form, as also otherwise), but indicates that only the Turkic counterpart is a KGW.

NOSE: Alt. ***k'/u/aŋa*** > Mong. ***qaŋ*** in ***qaŋ-bar*** (> **qabar** ~ **qamar**) 'nose', **qaŋ-siγar** 'bridge of the nose', **qoŋ-sijar** 'muzzle, beak, snout, nose', Tung. ***xoŋa*** 'the bows', ***xoŋa-kta*** 'nose', MidKor. **kó(h–)** id., probably preserved also in Turkic (Teleut **koŋïr** 'saddle of the nose', etc.) (Illič-Svityč 1965: 343; Kolesnikova 1972: 283–4; St 43–4). Doerfer disregards this comparison (pp. 173–4), erroneously citing Tung. ***oŋa-kta*** (while initial ***x-*** in the protoform is clearly indicated by Nanai **xoŋko** 'the bows').

MOUTH: Alt. ***am/a/–*** > Mong. **aman** 'mouth', Tung. ***am-ŋa*** id., (?) Turk. ***am*** 'vulva' (Poppe 1960: 40, 68; Kolesnikova 1972: 288–9; St 46–7). Another possible approach is represented in IS 1, 244–5, where the Proto-Altaic form is reconstructed as ***aŋma*** 'mouth' and viewed as a derivative of Alt. ***aŋ(a)*** 'hole, fissure' (> Turk. ***aŋ-/*äŋ-*** 'to be wide open', Mong. **aŋ** 'hole, fissure', Tung. ***aŋa*** 'fissure, hole; (wide) open'). The variants of this etymology are discussed—with emphasis on the weakpoints of each—also by Doerfer on pp. 174–6.

HEART: Alt. ***miāńV-m*** > Tung. ***miāwan*** ~ ***ńiāman*** 'heart', MidKor. **mǎńǎm** id. (SKE 136; St 48). The comparison from G.J. Ramstedt's SKE is not mentioned by Doerfer. The well-known comparison of Turk. **jüräk** 'heart' with Mong. **ǯirüken, ǯüruken** id. (KW 483–4) may also reflect a Proto-Altaic item or be explained as a result of borrowing (St 282), but Doerfer's idea of accidental coincidence (p. 185) is hardly felicitous.

HAIR I: Alt. ***k'ïlV*** > Turk. **qïl** 'hair', Tung. ***xińŋa*** (> ***xil-ŋa***) id., MidKor, **kārki** 'mane', cf. also Mong. **kil-γa-sun** 'hair of the mane and tail, horse hair' (VEWT 262: IS 1, 351–2; St 29). For an unclear reason Tung. ***xińŋa*** (see TMS 1, 317) is not even mentioned by Doerfer. Mong. **kilγasun** is considered (p. 184) to be a Turkic loan, which seems quite possible.

HAIR II: Alt. ***p'ūńV*** > Mong. ***füsün*** (> ***p'ün-sün***) 'hair', Tung. ***püńe-*** (Machu **fuńexe** 'hair, fur') (KW 460; St 29–30). Doerfer (184) qualifies this etymology as possible.

TONGUE: Alt. ***k'äliä*** > Mong. **kele(n)** 'tongue', Tung. ***xil-ŋü*** id., MidKor. **hjə́,** probably preserved also in Turkic (Old Uighur **kälä-čü** 'word', etc.) (IS 1, 346; St 57–8). Doerfer (176–7) mentions both the Mongolian and the Tungusic forms without, however, seeing their resemblance and comparability. As for the phonetic side of this

etymology, cf. Turk. **kämik** 'bone' ~ Mong. **kemi** 'marrow of bones' ~ Tung. ***ximū-ŋkse** 'melted fat' (St 281).

In my opinion the majority of the above-cited etymologies fit the highest standards of comparative linguistics. It is certainly everybody's right to agree or to disagree on this point. In many cases the compared forms are not as similar in their phonetic shape and derivational structure as those "Altaic" parallels which are really due to mutual borrowings; but this is exactly what must be expected, if the loanwords are often quite recent, while the real cognates had at least 7 or 8 millenia to undergo changes and, very often, to be lost and replaced.

Regretfully, Doerfer—as well as many of his Anti-Altaistic adherents—tends to disregard the factor of time depth, demanding that the Altaic family, if it constitutes a genetic unity, should display all the features of such families as Indo-European and Uralic (which are substantially younger). On the other hand, he seems to have the idea that, if the Altaic languages are related, the phonetic correspondences between them must strictly follow the patterns suggested by G.J. Ramstedt and N. Poppe (Poppe 1960, where, as mentioned above, the cognates and the loanwords were not duly distinguished). How else can we interpret his remark (165) in connection with Turk. **judruq,** Mong. **nudurga,** Manchu **nuǯan** 'fist' that "Bei Urverwandtschaft wäre ev. ***nudurka,** ma. ***nučan** zu erwarten"? Incidentally, this remark makes a curious impression: there are, according to Doerfer, no genetic cognates in the different branches of Altaic, but there are strict phonetic correspondences between these non-existent cognates.

The more remote a genetic relationship of languages is, the more difficult is the establishing and the investigation of it and the less consensus can be expected to be found among the scholars. As Doerfer states (p. 267), "als 'verwandt' bezeichne ich alle Sprachen, die durchgehend von allen (oder fast allen) Spezialisten als verwandt bezeichnet worden sind".

This is a very democratic procedure for finding out whether the languages are related. But in science, as probably also elsewhere, even the most exact and democratic counting of votes cannot make up for the prejudices of the voters.

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ENDNOTES

[1]This is hardly justified: M.Swadesh's 100-word test-list includes all 11 KGW, and only few of the innumerable RGW.

[2]Which can be easily rejected already through reference to English, where the number of French loanwords is several times as high as the number of genetic cognates preserved both in English and in French—but this fact certainly does not abrogate the IE origin of the English language.

[3]I have two minor corrections to the Samoyedic material on pp. 274–5: Nenets **ńămi, ńaṁu** "tongue" is a compound and does not go back to ***ńälmä** "tongue" (see Hajdú 1962: 53–4); the word **taja-m** 'finger' is not "tavg." (= tavgisch, Tavgi, Nganasan), but belongs to the Taigi dialect of the Mator language.

[4]Cf., however, the preliminary publication of essentially the same materials in the Papers from the Permanent International Altaistic Conference (Starostin 1986).

[5]Regretfully, in Doerfer's book they are often disregarded, though such an approach contradicts the author's explicit intention: ". . . bei weitem nicht alle bisher von den Altaisten angestellten Vergleiche makellos sind, aber man darf sie nicht beiseitelassen" (p. 156).

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JOHN M. LIPSKI, *The language of the Isleños. Vestigial Spanish in Louisiana.* Baton Rouge, LA: Louisiana State University Press, 1990. xii, 148 pp. cloth, $22.50.

Reviewed by GLENN G. GILBERT

My impression of this book is mixed. Its positive features include: 1) that which has now become Lipski's hallmark—the application of his impressive comparative knowledge of dialectal (uncreolized) Spanish, as well as of creolized Spanish, to the description and explanation of the development of various kinds of Spanish spoken in the New World and elsewhere (in this case, Isleño Spanish and Sabine River Spanish); 2) the book's very large, wide-ranging bibliography, many of the items being sufficiently rare as not to be widely known or easy to obtain; and 3) the distinct contribution the book makes in adding to our knowledge of the historical development and contemporary use of the Spanish language in both St. Bernard Parish (south of New Orleans) and in the Sabine river valley in northwestern Louisiana and northeastern Texas. Beyond this, the book is reasonably priced (at least compared to expensive European publications), physically attractive, and printed on durable paper, with typographical errors kept to a minimum.

On the negative side is an almost total lack of information on how Lipski's field data on both the Isleños and the Sabines was obtained. We know nothing of his Isleño consultants, their number, or their social/biological characteristics. One can only deduce the relative chronology of the work from his observation that "Hurricane Juan,

which caused the levy at Delacroix to rupture in late 1985, scattered this community after most of the present fieldwork had been completed . . .'' And buried in a footnote on p. 51 is his statement that ''I personally collected and verified all contemporary Spanish examples given in the present work.'' The source of the examples is not further identified, nor are the methods used to elicit them (although he seems to have used a combination of participant observation, language questionnaire, and/or audio/video taping).

Lacking information to the contrary, one must assume that the Spanish speakers in the Isleño area of southern Louisiana are all regarded as white, although Lipski's major predecessor in its linguistic description, Raymond MacCurdy (1950:21–22), cites a description of the Isleños from an article in the Oct. 22, 1838 *Weekly Picayune* to the effect that some of those who came to the markets in New Orleans from the Isleño area of Terre aux Boeufs were Spanish-speaking negroes: ''. . . the venders are both negro and white, with their women and children with them. All speak Spanish.'' MacCurdy goes on to observe:

> These Spanish-speaking negroes were probably former slaves who had accompanied their masters from Santo Domingo. Although there are still a large number of negroes living along the northern end of Bayou Terre aux Boeufs, principally in the town of Verette, Spanish is no longer current among them.

Lipski is less cryptic about the racial make-up of the Sabine River Spanish speakers, whose enclaves on both sides of the river have all the hallmarks of the linguistically interesting triracial isolates that have been identified on the East Coast (Berry 1963, Gilbert 1987): ''[They] are of varied racial backgrounds, but particularly in Louisiana, a significant number are of Native American extraction'' (p. 103).

Lipski's twenty-page, 346-item reference list (including thirty separate entries for his own work) is a mixed blessing. He has gone far beyond MacCurdy, Armistead (e.g., 1978), or any other previous writers on the Louisiana Spanish colonial settlements in giving us a wide, comparative perspective for attempting to explain the origin and development of this type of Spanish, and to assess its importance in the understanding of New World Spanish as a whole. On the other hand, most of the references are needlessly repeated in the form of full bibliographical footnotes, taking up an inordinate amount of space in an already disappointingly short book.

Another problem seems to be one of the spin-offs of the use of word processors to compose scientific prose of this type; in the electronic cutting and pasting that this technology now allows, sections of

the text may be easily repeated (I assume inadvertently), something which only a close reading will detect. For example, much of the second paragraph on p. 89 repeats verbatim part of the first paragraph on p. 44; and various (unnumbered) linguistic examples simply repeat the same ones presented earlier, e.g., those on p. 88–89 repeat the same group of examples given previously on p. 43 (and p. 45). Such a repetition of examples leads to an undesirable overlap in the sections of the grammatical description itself, as when Lipski writes about the very common infinitive-with-nominal-subject construction, e.g., *Era duro pa yo meterme con esoh niño inglese* 'It was hard for me to get along with those English-speaking kids' (p. 43, 88–89). When it is first mentioned, p. 43, the emphasis is on the linkage that this construction (and many others) symbolizes of Isleño Spanish with the Spanish of the Caribbean, the Canary Islands, and Andalusia. Later (p. 88–89), the focus shifts to English interference in Isleño Spanish:

> Although such combinations [infinitives with nominal subject] are attested in other areas, their nearly exclusive use among the *isleños* suggests the direct syntactic influence of English, undoubtedly aided by the previous existence of suitable patterns in the popular Canary Island and Andalusian dialects that formed the original basis for *isleño* Spanish.

Prior to publication, the organization of the text could have been better scrutinized, eliminating the overlapping sections and perhaps adding a section on Isleño features with multiple origins, what Herskovits (e.g., 1941) identified as "syncretisms."

Lipski uses a surprising number of descriptive epithets that could be interpreted (misunderstood?) by the casual reader as value-loaded, stigmatizing Isleño Spanish as inferior to other types of Spanish. Phrases of this sort include: ". . . *isleño* speech exhibits a certain confusion between /b/ and /g/ . . ." (p. 16); ". . . the overall level of phonological erosion of *isleño* Spanish . . ." (p. 18); ". . . phonological deformations . . ." (p. 29); ". . . phonological modification through misidentification . . ." (p. 29); ". . . false analogy . . ." (p. 29); " . . . phonological identification is significantly impaired as compared with that of previous generations [refering to semi-speakers, a concept Lipski is well aware of; see, e.g., p. 48] . . ." (p. 29); ". . . deviations . . ." (p. 35); " . . . discrepancies . . ." (p. 35); ". . . non-etymological diphthongs . . ." (p. 36); ". . . instability of grammatical gender . . ." (p. 36); ". . . unconscious phonetic deformation . . ." (p. 39); ". . . morphological instability . . ." (p. 53); " . . . nonetymological gender . . ." (p. 56); ". . . highest level yet of

insecurity and error in the assignment of nominal number and gender . . ." (p. 56); ". . . the incomplete dominance of a consistent grammatical apparatus" (p. 63); and numerous others. Although I was aware of what Lipski seemed to be trying to say— and didn't think any worse of the Isleño dialect for it— others might think differently.

No one will deny the value of learning as much as possible about this Spanish dialect on our doorstep, before its demise. Yet, the book at times reads more like a grant proposal than a research report. The reader gets the impression that Lipski has spent an excessive amount of time in the library, at the cost of work in the field. The book could well have been shortened to the length of a journal article, by reducing the size of the reference list and making a more efficient organization of the material, with the appendix (which takes up twenty pages) on Sabine River Spanish as a separate article.

The four-page index (unusual in a book this size) is welcome, although uneven in its coverage—listed, for example, is *semi-speakers,* but not *creoloid,* although both terms appear to play an equally important part in Lipski's discussion.

Some Louisiana and Texas location maps would have been helpful. I would certainly concur with Lipski in his recommendation that

> Linguists, as well as anthropologists, historians, and ethnographers, would do well to sustain and even increase their intensive efforts to study the rapidly disappearing *isleño* culture and language . . . (p. 99)

Thus, rather than my (tongue-in-cheek) suggestion above of dismembering the book into a series of journal articles, what is really needed now is an augmented second edition emphasizing fieldwork designed to yield data bearing on the dialect-internal variation and comparative problems that Lipski has identified.

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THOMAS BECKER, Analogie und morphologische Theorie. (= Münchner Universitäts-Schriften—Philosophische Fakultät / Studien zur Theoretischen Linguistik, 11) Munich: Fink, 1990. 208 pp.

Reviewed by RAIMO ANTTILA

The book is divided into five chapters: 1. "Introduction" (9–13), 2. "Analogy" (14–62), 3. "Morphological rules" (63–129), 4. "Some morphological structures of Standard German" (130–186), and a one-and-a-half page 5. "Summary" (187–188), plus a bibliography (189–208). Chapters 2 and 3 have rich and clear articulation in subsections, and the menu in 4 covers the schwa, umlaut, Auslautverhärtung und "Inlautweichung", accent, and the noun inflection. Becker's treatment is clear and convincing throughout, although, curiously, the exemplification chapter leaves one cold, but this might be a personal quirk of mine. The introduction tells exactly what he will do, and the short summary is excellent. The book was originally a Munich dissertation, supervised by Theo Vennemann.

Becker takes off from "classical" generative grammar showing that it continues Pāṇini's tradition and thus replaced the Greco-Roman notion of analogy (9). His aim is first to close the gap between the Greeks and generative grammar, and second to make the notion of analogy precise (10), which, according to him, has never been done in the 20th century (16). The former point is of course a little curious, because bridging this gap eliminates generative worth, and this Becker does quite well. But generative grammar is a standard now, a (step) mother of all theories, even when it seems to be tomfoolery in disguise. Hence we have another instance of the kind of progress Ernst Gellner delineated a long time ago. I feel it would have been more just to expressly develop the classical conception, which is there in e.g. Hermann Paul (and quite properly emphasized by Becker), because that is what Becker in fact does (13, 128). The second point involves a problem into which linguists have been bumping for a hundred years: analogy is roughly a relation of similarity, but what is interpreted as similar cannot be defined *in advance*. Becker understands this too:

important is what people actually do (11, 175). Because of these two points Becker cannot ("theoretically") succeed the way he expects, but in practice he does, as I will attempt to portray below.

Becker's argument goes as follows, and this is in principle the content of §2, the informal discussion of analogical formations according to the author's own labeling (62): Morphological relations are relations between *word* forms (187–188), and the theoretical importance of abstract *stem* forms vanishes (10). There is no difference between analogical and so-called regular forms, and in fact even the concept of the morpheme becomes superfluous: the word is the smallest unit (12, 66). Transformations are proportions (12, 187–188), which is exactly what many "traditional" linguists maintained. All this makes analogical formations a kind of lexical change (17). Becker's discussion of the complaints against the proportional formula are good (15–28). The proportion is necessary but not sufficient in morphological rules, and it is the lexicon that decides whether the resulting forms are "correct" or "false" (28–30). Lexical relations are not directed (40), and thus analogical leveling can go into any direction (23), if there are speakers who pull off such a relation for further use (57). In other words, analogy shows what is real, if its occurrence is $> \varnothing$ (188) (which smacks of sophistry, but such is linguistic formal "precision" these days). Because of the semantic idiosyncrasies of words, a morpheme lexicon cannot do justice to the description of language (34)—in fact, a stem lexicon has absurd consequences (37–38), which we know so well from generative grammar. Any form can be "basic" when one operates with analogical formations (57, 59, 175).

A word structure is different from a word in that it can contain variables, e.g. *Xlich,* a structure that the word has when it is identical with that in its own domain. The word *grünlich* has the structure *Xlich,* when *grün* occupies X (64). Becker adopts Vennemann's components for words or lexical entries, viz. (1) a phonological word form, (2) a syntactic category, (3) a semantic representation, and further (4) various pragmatic properties (64–65). A lexical entry thus look like

/'gryn$_{\$}$lɪç/ Adj 'greenish'

whereas the word structure of color adjectives with *-lich* (*grünlich, bläulich, schwärzlich,* etc.) comes out as

X1Iç
Adj
'tinged slightly P'
(P is a color term)

The morphological relation between grün and grünlich is schematized with the following rule (66):

X
Adj
'P'
(P is a color term)

---›

X1Iç
Adj
'tinged slightly P'
(P is a color term)

A word that has a morphological word structure is a "morphologically possible word", e.g. *säblich*. Whether it actually exists in standard German is a question of lexicology, not morphology, but a morphologically possible word that is in a morphological relation with an established word is a possible analogical formation (66). Analogy can now test productivity and check unnecessary abstractness: two words are only then in a morphological relation when an analogical formation after them would at least be understandable (119). Assume colloquial German would borrow the English adjective *nice*. If a noun *Nitze* would be created, it would certainly enhance the pair *heiß/Hitze*. English *feets* is an irregular formation, but as a form it is regular and system adequate; to describe such regularities morphology needs both morphological relations and morphological word structures (74). This conception indeed makes change treatable, and it makes the various generative approaches superfluous or beside the point (13, 19, 23, 26, 35–37, 71, 73, 74, 90, 97, 120, 127). I spare the names here, but it means that most "theoreticians" will find their idols in the stocks. All this agrees significantly with the operations of prescinding, which means that proper notions of abstraction are after all covertly included in Becker's theory.

One could expand on this line: Working with relations one of course works with indexes. One such relation has to be selected or prescinded as a basis for analogical formation. This is where the criticism against analogy has usually gone wrong, i.e. one has not paid

enough attention to the bases one feeds into the operations. One selects a base, and this is an induction, which then is expanded with a diagram (abduction). It has become clear that the main force of change is the indexical icon, and from the semiotic point of view Becker's book is strong evidence for it, although he himself does not refer to this.

Note that Becker's paradigmatic view of morphology does indeed come close to the Greek notions, as he says, although he does not elaborate on this at all. For the Greeks, what was necessary was an example, paradigm, appended with analogy for the relations, old and new. This still remains absolutely central, and this is what Becker now brings back, rather elegantly, after the recent aberrations in linguistics. Becker builds on the "Dutch School" of paradigmatic morphology as exemplified in the work of E.M. Uhlenbeck and Hendrik Schultink, but particularly in that of Jaap van Merle (40). This is extremely useful knowledge for the average linguist, including Uhlenbeck's "Kromofication" in Javanese (20–22), a process of creating polite variants of familiar forms. Other similar situations have been mentioned in the morphological literature, but the "theoreticians" have not paid attention, because they would have had to change their "theory". As for the paradigmatic view, I think there is a worthy variant of it in Finland, e.g. in the work of Terho Itkonen and Heikki Paunonen. But as with the Greeks, Becker does of course not seek historical completeness, e.g. he does not go into the recent rich literature on analogy in "Artificial Intelligence". The very end of Becker's book sums up that the paradigmatic concept of the morphological rule produces fewer empirical and theoretical problems than the word-syntactic one (GG) which describes the morphological structure of words in its syntagmatic construction. And the paradigmatic view is not inferior to the syntagmatic one in precision and explicitness (188). Very true.

I have just depicted the main features of Becker's book. The book is eminently worth reading, and thus I leave its full riches for individual acquaintance by readers. It shows further that it is time for American linguists to acquire a reading knowledge of German; this is a good book to practise with, since its language is straightforward and clear, even for a foreigner.

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COOPER, CHARLES R., and Sidney Greenbaum, eds. *Studying writing: Linguistic approaches*. Vol. 1, Written Communication Annual: An International Survey of Research and Theory. Beverly Hills, CA: Sage, 1986.

Reviewed by KIM BRIAN LOVEJOY

Anyone interested in discourse analysis and the study of written communication will want to read Cooper and Greenbaum's collection, not only for its theoretical and methodological approaches to the study of writing but also for its contributions to a knowledge of writing as a mode of discourse. *Studying Writing: Linguistic Approaches* is the first volume in Written Communication Annual, a series devoted to examining a wide range of topics in the study of written communication. Drawing on the works of North American and European researchers, this first volume examines writing from the perspective of linguistics and outlines many new directions for research bridging linguistics and composition studies.

Included in *Studying Writing* are eight studies that examine written texts from a number of different genres. Several studies describe and illustrate particular linguistic procedures for analyzing written discourse of any kind, while others offer more detailed analyses of particular discourse types. Together these studies, all by prominent researchers from the fields of linguistics and composition studies, represent some of the important contributions that text linguistics and discourse analysis offer in studies of written discourse.

In the opening chapter, "Writing in the Perspective of Speaking," Wallace Chafe examines the differences between speaking and writing by comparing samples of spoken and written discourse produced by the same person. Writing being a deliberate, planned activity, unlike speech, Chafe examines the distinctive features of written texts—how writers dispense information differently than speakers do, and how writers implicitly and explicitly signal these differences in their writing. He analyzes and compares a transcript of a conversation and an excerpt from a scholarly article and questions whether there is anything in written discourse analogous to intonation units in spoken discourse. Thus, he raises an important question: Do writers have intonation in mind as they compose written texts? Chafe suggests that both writers and readers assign intonation, stress, and pauses to written language. He demonstrates how punctuation marks are "at least rough delimiters of units that are analogous to intonation units" in spoken discourse (p.

18), and describes the variety of ways that writing differs from speaking, largely because of the elements of revision.

Jan Firbas, in "On the Dynamics of Written Communication in the Light of the Theory of Functional Sentence Perspective," provides an introduction to functional sentence perspective (FSP), a theory of "how the semantic and syntactic structures of the sentence function in fulfilling the communicative purpose intended for the sentence" (p. 40). A key factor is the notion of communicative purpose, for in FSP analysis a sentence is analyzed and interpreted from the perspective of its intended informational purpose. Firbas outlines his own approach to FSP by describing the concept of "communicative dynamism (CD), which refers to a quality displayed by the development of information toward a particular communicative goal" (p. 42). The degree of CD is determined by the relative importance of information carried by elements within a sentence. Firbas discusses the interplay of three factors that determine the distribution of CD: (1) linear modification, the idea that sentence elements gradually increase in degree of importance from beginning to end; (2) context, the marking of given and new information; (3) and semantic structure. Both context and semantic structure may cancel linear modification in signalling the degree of CD within a sentence. After detailing a very complex analytical model of FSP, Firbas applies the model to short samples of literary, journalistic, and epistolary texts, revealing differences in the way each text is constructed.

In a related chapter, "Given and New Information and Some Aspects of the Structures, Semantics, and Pragmatics of Written Texts," William J. Vande Kopple provides a broader view of the theory of FSP, delineating its three major formulations in the research. Vande Kopple then focuses on one of these formulations: the division of the sentence into given and new information. After reviewing the major distinctions between given and new information, as well as some definitions of the meaning of *information,* he discusses the given-before-new hypothesis and reports on his own experimental studies of readability and retention that provide strong evidence for this hypothesis. Unlike Chafe and Firbas, he devotes considerable attention throughout the chapter to problems, concerns, and new directions needed in research on given and new information. Researchers will find particularly useful the section of his article on needed refinements in the definition and analysis of given and new information in texts, and another in which he lists seven areas for future research.

In "Writing Processes and Written Products," Stephen P. Witte

and Roger D. Cherry explore the connections between writing processes and written products. Because it is often questioned whether writing processes can be inferred from written products, they present their study as explorative and speculative. But what they achieve in their analysis suggests that we can learn much about writing processes from a close examination of written products using discourse analysis procedures, and that future research in this area holds the promise of much new knowledge about writing processes—knowledge that can help composition researchers further refine their models of the composing process.

To set the context for their study, Witte and Cherry provide an impressive review of research on writing processes and on written products, in fact one of the best reviews I have read. Using topical focus analysis, the authors examine informative/descriptive texts written by students at grade levels ranging from 4 to 15 and all in response to a single writing task. The authors identify four patterns of sentence topics in these texts, or four different framing strategies that the writers use in constructing their texts. These framing strategies, the authors argue, "result from the writers' different conceptualizations of an identical writing situation and, perhaps, different choices about specific content" (pp. 130–31). After comparing their findings with thinking-aloud protocols of writers, the authors argue convincingly that topical analysis can lead to meaningful inferences about the composing processes of writers and the ways individual writers define a writing task for themselves.

The next three chapters examine specific discourse types. In "News Schemata," Teun A. van Dijk extends his work on discourse structures by examining the organization of news reports, showing how they consist of conventional schematic categories. He describes each of these structural categories and the rules for their ordering in news schema, and suggests that such properties of discourse are "socially shared systems of rules, norms, or strategies for the use of news" (p. 155). Examining hundreds of domestic and international news reports in newspapers from as many countries, he relates schematic categories to the global content of news reports and shows how these hierarchically ordered categories are recursive in nature, for the "overall relevance structure" of news reports requires that the most important information in each category is given first. He suggests that such an analysis of schematic structure provides "an evaluation procedure for 'well-formed' news reports" (p. 181) and that similar analyses of other discourse types can help us better understand the

organization of written discourse and guide programs in writing instruction.

In "Overlapping Patterns of Discourse Organization and Their Implications for Clause Relational Analysis of Problem-Solution Texts," Michael Hoey examines a common pattern of discourse organization, the problem-solution pattern, in relation to two other patterns, question-answer and hypothetical-real. When written discourse is described and interpreted in terms of clause relations, which define the way writers organize and readers process information, the combinations of clause relations produce patterns of organization like the ones above. Using a number of sample texts from varied sources, however, Hoey illustrates how these apparently distinct patterns of organization actually share features with each other. He advances the claim that they are "nonstructural and interactive in nature" (p. 211): nonstructural because they have no predictive power, and interactive because they can be described only by reference to the reader and to the speech acts performed in written discourse. To account for such discourse patterns in clearer terms, Hoey argues for an extension of the concept of clause relations to include speech act relation. By arguing for a broader conception of clause relations, Hoey suggests that both spoken and written discourse can be described using clause relational analysis, and that such research can provide much needed knowledge about the structural relationship between speaking and writing.

Chaim Rabin examines written commentary on texts and its relation to conversation. In "The Discourse Status of Commentary," Rabin delineates various kinds of commentary, such as word explanations and comments on sentence structure, style, the rhetoric of the text, and the ideology of the author. In commentary on ancient texts, where the meanings of words may not be known or may not correspond in meaning to words in another language, the commentator assumes the role of the speaker in providing "clarifications that ideally the author might have given if he or she had lived in the readers' ambience" (pp. 223–24). To illustrate various aspects of commentary, Rabin analyzes the work of an eleventh-century commentator ("Rashi") on the Hebrew Bible. Because reader expectations change with different generations and cultures, commentaries on the Bible likewise change in that they raise different questions and provide different answers. Rabin suggests that further research in this area can reveal much about "how each period and school understood the structure of the Biblical Hebrew language . . ." (p. 224).

In the final chapter, "Cognitive Models and Discourse Analysis,"

Carl Fredericksen describes cognitive models of discourse representations and illustrates how these models are applied in research on student comprehension and writing. He explains how current cognitive theories distinguish between semantic conceptual structures that represent meaning and knowledge, and textual structures that encode and transmit meanings. In particular, he reports on his research in developing methods of semantic discourse analysis that reveal the propositional and frame-level representations of expository and fictional texts. While these methods are complex in nature, they are powerful tools, as Fredericksen demonstrates, in the study of discourse production and comprehension. Frederickson draws on data from experimental studies of children's text comprehension and story production to show how an analysis of the propositional content of texts and the frame structures based on that analysis can reveal children's ability to recall semantic information and to reason inferences in texts that reflect different frame structures, such as description, narration, and explanation. He also reports on similar studies involving more complicated texts with secondary and post-secondary students, suggesting that these methods of discourse analysis have limitless potential in the study of discourse processing skills at all levels.

The theoretical and methodological approaches to text analysis represented in this volume give some indication of the growth of linguistic discourse analysis as a means of inquiry. Linguists and composition researchers interested in the study of writing—or language in use—will find much of value in this collection. Those interested in academic writing, for example, will find a number of linguistic approaches that may be useful in research studies that investigate how different epistemological assumptions are reflected in academic writing. Teachers of graduate-level courses in discourse analysis and text linguistics will want to consider this collection for its overview of linguistic concepts and methodologies. As researchers and teachers, as we learn more about the dynamics of written discourse from books like Cooper and Greenbaum's and from our own studies of texts, we can approach the teaching of writing and reading with a more concrete understanding of how texts are produced and received, making it easier for our students to understand and practice the conventions of discourse types and genres.

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Johannes Kramer/Otto Winkelmann (eds.), *Das Galloromanische in Deutschland,* Pro Lingua 8 (Wilhelmsfeld: Gottfried Egert, 1990), 236 pp.

Reviewed by ALFRED WOLLMANN

In mainstream Romance and Germanic philology, the linguistic influence of Gallo-Romance and French in German and in German dialects, respectively, has hitherto received at best uneven attention. While the early period comprising the Roman, post-Roman and early medieval period are clearly dominated by the studies of Theodor Frings concentrating on Latin loan-words in the *Germania Romana,* the later periods of Gallo-Romance and French influence especially on the diatopic level have been seriously neglected. On the side of Romance philology in Germany, during the 19th century this was partly due to the political climate dominated by nationalism and Francophobia, which was not favourable to a closer study of Romance influence in German or of the French-speaking communities within Germany. Furthermore, at that time Romance studies concentrated on Old French and Old Provençal. Research on Romance language communities in the Mosel valley surviving into the high Middle Ages was instigated by Wolfgang Jungandreas in the 1950's, but otherwise the contribution of Germanic philology to these aspects of linguistic interference is scant, a fact which is rightly criticised by the editors (8, note 27). The present anthology of chronologically wide-ranging essays, however, reveals, that much important research has been done in recent years by Romanists, which in some cases might not be readily accessible to the English-speaking world.

The contribution by Max Pfister ("Die Moselromania und die romanischen Reliktzonen im Hochwald-Mittelrheingebiet und im Schwarzwald", 11–32) provides a useful survey of recent research on the *Romania submersa* which is often dispersed in local historical journals. The existence of a Romance-speaking area in the Mosel valley up to the beginning of the 13th century is an established fact. It is evidenced by Romance lexemes surviving as toponyms (e.g. *Kolm/Kulm* 'hill, ridge', *in der Gott* < L *gutta* 'brook, rivulet'), class names and a relatively high frequency of loan-words. Like other peripheral zones of linguistic interference the Mosel valley and the adjacent mountain regions were not an isolated homogeneous Romance *Sprachinsel* but an area of Frankish—Gallo-Romance bilingualism with Romance increasingly becoming restricted to the agrarian sphere (viniculture) and domestic contexts (*'Haussprache'*, 20). Variations

like *nāf/nēf* or *waber/weber* 'meadow' exhibit the Romance palatalization of tonic free /a(:)/ > [æ] > /e(:)/ which is commonly dated to the 9th/10th centuries. It provides a *terminus post quem* of continuing contacts with Gaul but at the same time the different geographical distribution of forms with /a/ and /e/ reveal a gradually shrinking Romance-speaking language area centering on the middle course of the Mosel valley. While Jungandreas still assumed that the Mosel variety of Gallo-Romance became extinct in the course of the 13th century, Pfister argues that the process of extinction was well under way in the 12th century (20). Pfister also draws our attention to more recently discovered relics of Romance-speaking communities in the Hochwald (a mountainous area of retreat of the romanised population to the south of the Mosel valley), in the region around Prüm and in the Black Forest, the latter forming a link between the Mosel valley and the romanised regions in eastern Switzerland.

Readers adhering to the traditional definition of "Gallo-Romance" as the pre-Old-French period extending from the fifth century to the Strasbourg Oaths (842) might be mislead by the book's title because the major part of the anthology centers, in fact, on the 17th and 18th centuries followed by essays on the French element in various German regions. It begins with a contribution by H. J. Schmitt ("Lexikalische Untersuchungen an französischsprachigen Waldenserakten aus dem deutschen Refuge", 33–37) on the vast amount of written sources on the Waldensian colonies in Germany, the linguistic relevance of which to early modern Fench has hitherto scarcely been recognized. Schmitt's emphasis is on the value of the records dating from ca. 1685–1735 as a lexicographical source providing numerous antedatings and additions of lemmata of the *FEW*. The Waldensian records dispersed over southern Germany, Switzerland and the Netherlands deal mainly with administrative affairs and matters of everyday life like petitions, complaints and private letters. These documents supplement the corpus of the *FEW* which relies heavily on literary texts. It is not surprising that the Waldensian records contain numerous archaic and dialectal words which still do not, however, justify the classification of a specific variety of 'Waldensian French' (49) since other peripheral regions in France possibly share the same lexical characteristics neglected by the *FEW*.

The essay by B. v. Gemmingen (59–76) on the *Lexique Francais-Allemant* (1631) by Landgraf Moritz of Hessen (1572–1632) will be of interest to students of historical lexicography. It reveals a surprisingly high standard of lexicography at the beginning of the 17th century

otherwise characterized by the bilingul dictionaries of Hulsius (1602) and Stoer. In addition to the reproduction of the two titlepages (75–6) a copy of one sample page of dictionary entries would have been helpful.

U. Helfrich's essay (77–88) deals with the so-called "Alamode"-period in German exemplified by the letters of the Duchess of Orléans, Elisabeth Charlotte ("Sprachliche Galanterie?! Französischdeutsche Sprachmischung als Kennzeichen der 'Alamodesprache' im 17. Jh."). The *alamode*-style in Germany is partly comparable to the revival of Latin in the English literary language of the 16th century and likewise was the subject of metalinguistic discussions on the correctness, desirability and usefulness of loan-words. The usage of French was not, however, functionally restricted to the written literary language as was the case with Latin in Renaissance England. The *alamode*-style, which means the extensive usage of French loan-words and even of syntactic constructions (e.g. *ich fragte von meinen Leuten*) and collocations—was not only a literary style but also a *höfische Gebrauchsnorm* (84), a term which would need some further elaboration. Helfrich notes that one characteristic of the *alamode*-style is that it was used also in informal communicative contexts (letter-writing). Probably this means also a colloquial standard specific to the nobility of the courts—a language situation which is sociolinguistically and functionally comparable to the position of French during the Middle English period.

The following two essays by J. Kramer and R. Windisch concentrate on the influence of French in the Rhinelands during the period of Napoleonic occupation (1794–1815). Kramer's contribution on French language policy (89–102) is interesting from the sociolinguistic point of view but not surprisingly comes to the conclusion that French influence on the German language in the Napoleonic period cannot have been but superficial. R. Windisch more specifically deals with French loan-words attested in the Ahr valley (Ahrweiler, Adenau, Remagen) on the basis of a questionnaire carried out in 1989. Methodically Windisch's essays raise several important problems. The proof that the loan-words were actually borrowed during the Napoleonic period and not earlier, for instance during the *alamode*-period, is very difficult since reliable linguistic criteria for dating the loan-words are lacking (see also the contribution by A. Greive, 118). The synchronic approach reveals that the French element in the German dialects is increasingly on the retreat, a fact which is not becoming sufficiently clear if we look at the *Rheinisches Wörterbuch* or Wrede's *Neuer Kölnischer Sprachschatz* (see also Greive, 123). With reference

to the Rhineland the sound lexicographic basis should be used to ascertain the French element currently in use in contrast to the one documented in the dictionaries.

The third part of the book consists of case studies on French loan-words in different regions mainly from a diachronic point of view. Cologne (A. Greive, 117–24), Mannheim (O. Winkelmann, 125–39), Siegerland (S. Kowallik, 141–92), Hessen (Beltershausen near Marburg, P. Stein, 193–203) and Berlin (R. Schlösser, 205–15). Greive draws our attention to gender assignment in French loan-words which on the level of dialects seems to conform to the pattern applying to French loan-words in High German. Gender assignment frequently was motivated by the semantically nearest native equivalent which throws some light on the nature of borrowing. Since originally many loan-words had some sort of native synonym they were "luxury loans" not essential to communication. They gradually underwent semantic differentiation which sometimes is more marked in dialects than in standard High German (121, but see also Winkelmann, 136–7). The survival of French loan-words in the dialect of Cologne is secured by the existence of the corresponding loan-words in High German. Loan-words with a purely local distribution are more and more becoming extinct, a process which in Greive's view is accelerated by the fact that the overwhelming majority of Cologne loan-words are "luxury loans". The disappearance of loan-words seems to be, however, not explainable by functional criteria alone. Otherwise, there would have been no objective necessity for "luxury loans" like ON *taka* > ME *taken* (vs. ME *nimen* < OE *niman*) or ME *forest* (< OF *forest*, vs. OE *weald/wald*) to survive. If we leave aside the simplest case, namely the extinction of the loan-word due to the disappearance of the *signifiée* (see the numerous military terms borrowed in the course of the 17th and 18th centuries), the basic reason for the survival or disappearance of loan-words seems to lie in changing sociolinguistic contexts. According to Winkelmann (138) extensive borrowing in dialects is due to a marked tendency in dialects to use synonyms. If this is so Greive's view that "luxury loans" are frequently in danger of becoming extinct due to their functional redundancy has to be modified. P. Stein notes that the resistance especially of loan-verbs is remarkable (202). All studies on the French element in local dialects agree that many or even the majority of French loan-words attested in historical dictionaries are now obsolete or are near extinction. Winkelmann observes that in Mannheim the use of French loan-words now is a characteristic of long established residents in informal com-

municative situations (138). In the long run the stigmatization of the usage French loan-words doubtless is the precursor of extinction.

The contribution by S. Kowallik on French loan-words in the Siegerland would have greatly profited from the inclusion of maps charting the numerous isoglosses and the territories described in the introduction on the historical and linguistic background. 90% of Kowallik's corpus of some 200 loan-words are represented in the *Rheinisches Wörterbuch* and 61% in standard High German (184). This makes clear that even relatively isolated dialectal regions like the Siegerland were affected by the influx of French loans borrowed from standard High German or from certain irradiating centers of French influence which still have to be defined. On the other hand Kowallik's essay shows that we have only a low-profile individuality of specific dialectal regions.

Anthologies are notoriously difficult to characterize but the present one is a major contribution to the vast field of French-German linguistic interference and to linguistic borrowing in general. The detailed word indices will be very welcome, and not only to lexicographers.

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